The Goulstonian Lectures

ON

SOME DISORDERS OF THE CEREBRAL CIRCULATION AND THEIR CLINICAL MANIFESTATIONS.

Delivered before the Royal College of Physicians of London on March 11th, 16th, and 18th, 1909,

BY ALFRED E. RUSSELL, M.D. LOND., F.R.C.P. LOND.,

PHYSICIAN TO OUT-PATIENTS, ST. THOMAS'S HOSPITAL.

LECTURE III.[1]

Delivered on March 18th.

MR. PRESIDENT AND GENTLEMEN,—Finally, the subject has been studied experimentally by various observers. The blood-supply to the brain of animals has been cut off and the effects produced on allowing the circulation to return have been studied. One of the most exhaustive studies has been made by Messrs. Stewart, Guthrie, Burns, and Pike.[2] Their experiments were performed on cats. The animals were anæsthetised with ether. Ligatures were placed round the innominate and the left subclavian artery proximal to the origin of the vertebral artery, the blood-flow being stopped by traction on the ligatures. Artificial respiration was kept up. There is, however, an important distinction between their experiments and the results obtaining in the cases here described. In the experiments the blood flow was cut off from the brain and medulla only, the circulation in the greater part of the cord and in the trunk and lower extremities remaining, whereas in the cases described in the last lecture the whole circulation of necessity came to an end.

Muscular movements.—There was usually a sudden stiffening of all the muscles following occlusion, with violent movements of fore and hind limbs and tail. Micturition and defæcation might occur. Then the fore-limb movements ceased, shortly afterwards the hind limbs relaxed and the whole animal lay limp and quiet until after the restoration of the cerebral circulation. The cerebral circulation was allowed to return after varying periods and the effects were noted.

Respiration.—The first sign of returning vitality in the respiratory centre was a strong gasp. This was repeated at progressively shorter intervals until spontaneous breathing was established. The first gasp might occur at a long interval after the restoration of the circulation. Thus, after an occlusion of 28 minutes the first gasp occurred 40 minutes after release.

Convulsions.—Convulsions varying in severity from occasional twitchings of the limbs to extreme opisthotonos and violent struggles of tonic or clonic type sometimes begin before the full return of the reflexes. Occasionally the cat may lie quiet for one to three hours before the convulsions begin. The head may be drawn back in extreme opisthotonos or may be bent downwards with the back convex. There may be tonic spasm of the fore limbs and clonic spasms of the hind limbs. Again, there may be violent clonic spasms in which the animal flings itself about from one side of the room to the other. The convulsions may follow in such rapid succession as to make it difficult to distinguish any interval between successive seizures.

THE TIME LIMIT OF THE RECOVERY OF THE BRAIN FROM ARREST OF THE CIRCULATION.

In the experiments on cats no animal recovered after a longer period of occlusion than 16½ minutes, though in one case after 22 minutes' occlusion the animal recovered without loss of intelligence but with paralysis of one fore limb, death following, however, from pneumonia on the seventh day. But these experiments did not impose so severe a test as in cardiac inhibition in man, for the heart remained beating during the whole period of occlusion of the cerebral arteries, so that the life of the spinal cord and of the rest of the body was not interfered with. The integrity of the spinal cord was found to be essential to recovery, transection in the upper dorsal region being incompatible with the resuscitation of the cerebral centres. In the cases recorded in man the spinal cord suffered from the same arrest of blood-supply as the brain, and though this might not be so severe an injury as transection it would presumably materially diminish the chances of recovery. It is difficult to say for what period the brain can withstand the total arrest of its blood-supply and the patient make a complete recovery. In one case of chloroform syncope the heart appeared to be completely arrested for seven or eight minutes before direct cardiac massage was commenced. A disaster such as chloroform syncope is not conducive to accurate observations of time, and it is probable that the heart gave some beats under the artificial respiration, &c., applied during this period, but it was motionless when massage was begun and five minutes elapsed before its contractility was restored. Some blood would presumably be forced round the circulatory system during this five minutes, so that the full five minutes could not be added to the seven or eight. We are probably safe in assuming that about five minutes' loss of its circulation is the outside limit of time that the brain can withstand and recover completely. The heart itself, even in man, can, of course, withstand much longer periods of arrest and recover its contractility.

THE CONDITION OF THE BRAIN.

In the clinical cases no evidence of gross lesion of the brain was found post mortem and the cause of the non-recovery of the cerebral functions must be sought in some change affecting the nutrition of the neuron. Œdema of the brain was not noted as being present in either of the two cases which I reported, indeed in one the ventricles were described as not containing any excess of fluid and in the other the brain tissue was noted as being fairly firm. Convulsive seizures are a noticeable feature in these cases and would raise the intracranial pressure, a condition probably favourable to the passage of blood from the cerebral capillaries into the perivascular spaces. Until further knowledge of the histological changes in the brain in these cases is forthcoming, the cause of the non-recovery must be attributed to injury to the neurons and possibly to cerebral œdema.

REVIEW OF THE SYMPTOMS.

The cases come under very different categories: first, sudden cardiac inhibition during puncture of the chest or lavage of the pleura; secondly, cardiac inhibition in patients already unconscious from the influence of chloroform; and thirdly, experiments on animals in which no cardiac inhibition occurs, the supply of blood to the brain alone being abolished.

In the first group the inhibition may be of varying degrees of intensity and duration. (*a*) Sudden severe fatal syncope. Numerous cases as noted are on record. (*b*) Sudden syncope followed by complete recovery after the most alarming symptoms. (*c*) Sudden syncope; partial recovery, followed by death after varying periods of time; this class may be compared with the cases occurring under chloroform anæsthesia in which the onset of symptoms is denoted by arrest of pulse and respiration, but with the resuscitation of the heart and with the disappearance of the effects of the anæsthetic these cases are identical save for the extra shock attending the surgical operation. It is also comparable to a considerable extent with the third group—the animals whose cerebral vessels were ligatured for varying times, save that in these the circulation through the rest of the body was maintained.

The onset.—The suddenness of onset is highly characteristic and may be compared with the equally sudden onset of unconsciousness in the fit of idiopathic epilepsy.

The pulse.—This in some cases cannot be felt at the wrist, in others it has been noted as feeble or slow or intermittent.

Spasms.—(*a*) Initial tonic spasm. In the case of sudden death I reported tonic extensor spasm of arms was noted, with a convergent squint. In other cases sudden tonic spasm has been noted. This initial spasm is to be distinguished from the later convulsive movements and would appear to be the direct result of the sudden cessation of the cerebral circulation. It probably occurs oftener than is recorded, as the extreme urgency of the cardiac failure in these cases is not conducive to observations of transient symptoms. In the cases of chloroform syncope the anæsthetic would doubtless negative the spasm. In the experiments on cats "there was usually a sudden stiffening of all

[1] Lectures I. and II. were published in THE LANCET of April 3rd (p. 963) and 10th (p. 1031), 1909, respectively.

[2] The Resuscitation of the Central Nervous System of Mammals, by G. N. Stewart, C. C. Guthrie, R. L. Burns, and F. H. Pike, Journal of Experimental Medicine, 1906, vol. viii., p. 289.

the muscles following occlusion, with violent movements of fore and hind limbs and tail. ..... Then the fore-limb movements ceased, shortly afterwards the hind limbs relaxed, and the whole animal lay limp and quiet until after the restoration of the cerebral circulation." The sudden stiffening is obviously the same phenomenon as the initial tonic spasm in man; the violent movements of limbs and tail might depend on the fact that the spinal circulation was intact in the animals. (Leonard Hill noted the frequency of extensor rigidity when the limit of cerebral anæmia is reached and the excitability of the cortex is vanishing.) This initial spasm is seen in the tonic spasm observed after the unconsciousness and fall of the epileptic fit. (*b*) Clonic convulsions. These do not seem to occur in the cases of sudden and permanent cardiac inhibition. In the two cases I have seen, in the one with sudden death only extensor tonic spasm of arms was observed; in another which occurred when I was syringing out the pleural cavity the patient, who was sitting up in bed, fell backwards with absolute suddenness. There certainly were no clonic convulsions and I do not remember whether any tonic spasm occurred. Clonic convulsions in these cases appear to be conditioned by the return of the cerebral circulation. Their time of onset varies very considerably. They may appear very soon after the onset of syncope, or they may appear much later, as in the case of the child at St. Thomas's Hospital, in whom the first fit occurred two hours after the attack. Considerable variation was also noticed in the experiments on cats, in whom the convulsions might appear speedily after the release of the vessels from occlusion or not for an hour or more. With a very long period of complete cerebral anæmia the functions of the cortex and tracts must be permanently abolished. With periods of anæmia shorter than this the excitability of the cortex and the conductivity of the tracts revive on restoration of the circulation. Leonard Hill's researches prove that a stage of hyper-excitability precedes paralysis when the cortex is rendered anæmic.

Subsequent course of these cases.—In addition to the symptoms already mentioned the pupils dilate and become insensitive to light. Involuntary micturition and defæcation occur. Severe perspirations are common. Consciousness does not return, convulsions may recur from time to time, the deep reflexes may be exaggerated, irregular movements or rigidity of one limb or of both limbs of one side may occur, hemianæsthesia may be detectable, and finally death occurs. In one case here recorded death did not occur till the fifth day. In the case of the cats definite dementia was noted, in some cases following long occlusion of vessels. A similar condition has been observed by Leonard Hill in dogs and monkeys.

These cases of sudden failure of the cerebral circulation, whether produced by cardiac inhibition following pleural or pulmonary stimulation, or by sudden chloroform syncope, or by experimental ligation of cerebral arteries, are of great importance, not merely in that the clinical symptoms are of profound interest, but in view of the gravity of these accidents. They have also, I think, some bearing on the phenomena of epilepsy. Following upon a sudden arrest of the circulation, sudden syncope with unconsciousness is produced. In several cases transient tonic spasm was observed, and it may be that this is a common symptom. The first two symptoms of an epileptic fit are thus reproduced. Inasmuch as the arrest of the cerebral circulation in the cases just described was of very considerable duration, so long, in fact, as to render recovery impossible, the subsequent symptoms of necessity differ from those of the transient epileptic fit. Clonic convulsions do, however, occur with the return of the circulation. The condition bears some resemblance to status epilepticus and a stronger resemblance to some cases of uræmia. It is unquestionably the result of the severe cerebral anæmia, and in the next section evidence will be given that both status epilepticus and uræmic coma and convulsions also depend upon the same factor.

ON DIMINUTION IN THE BLOOD FLOW THROUGH THE BRAIN AS THE RESULT OF INCREASED INTRACRANIAL TENSION.

The experimental results following increased intracranial tension have been studied by Harvey Cushing.[3] He showed that if the intracranial pressure be rapidly increased "Kussmaul-Tenner spasms, evacuation of bladder and rectum, practical cessation of respiration, and pronounced vagus effect upon the heart, often with a complete standstill, lasting from 10 to 20 seconds, may develop. Then follows a release from this extreme vagus inhibition and the vasomotor centre exerts its influence." With a slower increase of the intracranial pressure a different series of events occurred. The pressure against the brain could be increased to the point of its equalling the blood pressure before any symptoms referable to the centres in the medulla were called forth. Direct examination of the cortex through a circular disc of glass fitting tightly into a second trephine hole showed at this period of equalisation of blood pressure and intracranial tension an *abrupt blanching* of the exposed convolutions. The pulsating arteries could be seen against the blanched background and the dark blue veins in the sulci remained filled with blood, but presumably little, if any, circulation passed between them. The usual consequence was not death *but a stimulation of the vaso-motor centre, which occasioned a rise in blood pressure sufficient to overcome the high intracranial tension;* the cerebral circulation was re-established and the rosy colour could be seen through the glass window in the trephine hole to return again to the blanched convolution. With further increase in intracranial tension the blood pressure rose *pari passu* and always to a point exceeding the intracranial tension. This process could be repeated until the arterial pressure was forced to two or three times its normal level, sometimes to as much as 250 mm. Hg, without evidence of vaso-motor failure. By this mechanism the vital centres in the medulla and the life of the brain and entire animal are protected.

Clinically it is well established that many of the symptoms of cerebral tumour, hydrocephalus, cerebral hæmorrhage, &c., are dependent upon an increase of the intracranial tension. Among such symptoms may be mentioned headache, vomiting, coma, convulsions, choked disc, &c. Extraordinary relief to these symptoms is attained after the pressure is relieved by surgical intervention. An admirable series of cases has been recorded by Harvey Cushing. The clinical evidence as obtained, therefore, from cases of cerebral tumour, cerebral hæmorrhage, &c., is in complete accord with the conclusions arrived at experimentally by Harvey Cushing. To recapitulate, it is clear that a rise in intracranial tension produced by the introduction of any foreign element, such as a tumour mass, blood, &c., must tend to diminish the blood flow through the brain. As the tension increases a point would be reached at which the intracranial tension equals that of the general blood pressure. The cerebral circulation would, therefore, cease were it not that by a compensatory process the general blood pressure rises to a point above that of the intracranial pressure, and thereby maintains the flow of blood through the brain. But with a great increase of intracranial tension certain general effects are produced, apart from focal symptoms, dependent upon the position of the lesion. Headache, for instance, is common and is probably attributable to tension of dura mater and tentorial structures.

Optic neuritis is to be attributed, in the main, to a passive venous congestion of the retinal veins, and subsides or improves on relief of intracranial tension, sometimes with extraordinary rapidity.

Finally, coma is almost invariable in the last stages of cerebral tumour and in large cerebral hæmorrhages. Convulsions are also frequent in these conditions. Both are remarkably improved by methods capable of lowering the cerebral pressure, such as trephining or lumbar puncture. And it is to be noted that by lowering the intracranial tension a free access of blood to the brain is facilitated.

Uræmia.—Uræmic convulsions may be absolutely indistinguishable from those of idiopathic epilepsy, and if it can be shown that there is evidence of a condition of cerebral anæmia in uræmia, support would be lent to the similar theory as applied to epilepsy. In a paper read before the West London Medico-Chirurgical Society I brought forward evidence to show that the cerebral manifestations of uræmia are due to cerebral anæmia produced by an increase of intracranial tension, resulting in all probability from cerebral œdema.[4] In the cerebral manifestations of uræmia we

[3] Some Experimental and Clinical Observations concerning States of Increased Intracranial Tension, American Journal of the Medical Sciences, 1902, vol. cxxiv., p. 375.

[4] Uræmia, West London Medical Journal, 1907, vol. xii., p. 9.

frequently see a symptom-complex almost identical with that of cerebral compression—viz., headache, vomiting, drowsiness, coma, convulsions, optic neuritis, &c. This symptom-complex is, at any rate in great measure, dependent upon increased intracranial tension, for many cases are now on record in which extraordinary relief has followed lumbar puncture, a procedure which, by means of allowing some of the fluid to escape, diminishes the pressure within the cerebro-spinal space. Numerous cases of uræmia were quoted from the literature in which marked relief had followed on the lowering of intracranial tension by means of removal of cerebro-spinal fluid by lumbar puncture. It is well known that uræmic convulsions and coma may disappear apart from such treatment, but the promptitude with which the improvement occurred was such as to leave no doubt in the minds of the observers that the relation was one of cause and effect. It is noteworthy also that in most of the cases the cerebro-spinal fluid did escape under considerable pressure.

But relief has not always attended the performance of lumbar puncture in uræmia, and this may be due to the fact that this operation can only relieve intracranial pressure by removal of the *free* cerebro-spinal fluid. If, however, the pressure is mainly produced by a cerebral œdema, then, unless a co-existent excess of free ventricular fluid were present, the removal of the little that would flow might not be sufficient to relieve the pressure materially.

The manifestations of uræmia here considered, which are so strikingly relieved by lumbar puncture, are, as has been pointed out, so closely similar to the pressure symptoms produced in other conditions—such as cerebral tumour, cerebral hæmorrhage, &c.—that uræmia has not infrequently been erroneously diagnosed as cerebral tumour, and the fact that the cerebro-spinal fluid is often under considerable pressure in these cases of uræmia indicates that the underlying condition of increased intracranial tension must be responsible for the symptoms. Harvey Cushing, indeed, makes this suggestion in the paper on the establishment of cerebral hernia above referred to: "I have come to believe that the same causes must underlie the choked disc of tumour and the so-called retinitis associated with renal disease. It seems not improbable that an increase of intracranial tension due to cerebral œdema may be responsible for the occasional retinal changes in Bright's disease, as well as for the headache and vomiting which may characterise it." The correctness of Cushing's views, founded on a series of brilliant researches, both experimental and clinical, is still further supported by a recent account of a case of uræmia in which subtemporal decompression was attended with most successful results.[5] The authors' conclusions were that the neuro-retinal and cerebral manifestations of uræmia are due to œdema of the brain, and also the local and transient hemiplegias, aphasias, amauroses, Jacksonian fits, &c.

Uræmic coma.—The foregoing facts indicate that in uræmia a state of increased intracranial tension is present and that relief of pressure by lumbar puncture or decompression causes a marked alleviation of the symptoms. Traube's view that cerebral œdema (which would produce the rise in the intracranial tension) produces anæmia of the brain is strongly supported by the above facts and especially by the striking case of decompression. The late Dr. Beevor also remarked, when injecting brains of people dead from various causes, that "it was particularly observed that the cases, where the injection did not penetrate well, were those suffering from granular nephritis or alcoholism, where there was much fluid in the subarachnoid space of the brain."[6] Concurrently with the increase of intracranial tension the blood pressure rises and we see the slow tense pulse so common in uræmia. This conservative rise of blood pressure maintains the cerebral circulation. If the tension progressively rises the compensatory rise of blood pressure cannot go on indefinitely, and a point may be reached beyond which no amount of vaso-constriction and cardiac augmentation can maintain an adequate cerebral circulation. If this point is reached gradually and the volume of blood passing through the brain be slowly diminished, we should expect a comatose condition to develop, the last stage of cerebral compression with gradual respiratory failure, the high-tension slow pulse of the early stage of compression changing into a soft, rapid pulse, with the developing vaso-motor failure. A concomitant toxic action on the brain is not denied; such may be present and aid in the production of the cerebral symptoms. But the anæmia alone should suffice to induce the coma.

Uræmic convulsions.—Under the severe strain imposed upon it in working against this conservative high blood pressure the heart may fail rapidly in chronic nephritis. Should this occur, or should the vaso-motor centre fail rapidly, it is clear that the cerebral circulation must fail equally rapidly when the intracranial tension is pathologically high. Instead of headache and somnolence, gradually developing into coma, a more sudden unconsciousness would result, and convulsions would readily be produced. It is of great interest to note that the onset of uræmic convulsions is, in fact, very apt to be associated with marked evidences of circulatory failure.

In cases of acute uræmia in acute nephritis it is well known that an increase of blood pressure is common, and the cardiac failure may be more readily induced owing to the more toxic character of some of the diseases associated with acute nephritis, the poisons of the acute infections, such as scarlet fever, materially affecting the heart muscle. The heart would thereby be unable to respond to the vaso-constriction above described, and the conservative rise of blood pressure would fail to develop.

In conclusion, it is submitted that the pathology of the cerebral manifestations of uræmia is to be sought in a condition of œdema and increased intracranial tension with failure of the cerebral circulation produced in the manner suggested; a gradual failure producing coma, a rapid one convulsions. If this conclusion be correct, strong support is lent to the theory that the fits of idiopathic epilepsy are produced by sudden failures in the cerebral circulation, for it is notorious that the convulsions of uræmia and of idiopathic epilepsy may be absolutely indistinguishable, and it is extremely probable that the factor underlying conditions so remarkable and so identical should be one and the same.

Status epilepticus.—Morgan Hodskins and Arthur Morton have reported a series of seven cases of status epilepticus treated by lumbar puncture. It is noteworthy that in four out of the seven cases recovery ensued, and that in every case but one there was an immediate and marked improvement as the result of the lumbar puncture. Further, in six of the cases the cerebro-spinal fluid was evidently under increased pressure, and in the only case in which the blood pressure was estimated it fell from 140 millimetres of mercury to 127 millimetres as the result of the puncture. Other successful cases are on record. These facts suggest that the condition of status is similar to what is seen in uræmia, in which, as has been pointed out, there is an increase of the cerebro-spinal pressure. And this increased pressure would tend to produce an anæmia of the brain unless the blood pressure rose to a point higher than that obtaining within the cranial cavity. The inference, therefore, that status epilepticus is due to anæmia of the brain brought about by increased intracranial tension does not appear unreasonable. It is possible that an unduly severe and prolonged fit in some way evokes œdema of the brain and that the increased pressure resulting from this is responsible for the anæmia and the continuance of the fits.

Mott[7] has shown that the essential changes in the brain in cases of status epilepticus are: "1. Great venous congestion and stasis. 2. *Œdema of the brain* and marked distension of the perivascular lymphatics, flattening of the convolutions, and naked-eye increased vascularity; but inasmuch as the brain is contained in a closed cavity venous stasis and œdema must be associated with a corresponding *arterio-capillary anæmia.*" It is interesting also to note that Mott finds that experimental ligature of arteries in animals leads not only to anæmia of the brain but also to œdema. Continuing the above quotation: "In the case of experimental ligation of arteries in animals, the effect may be similar but it is brought about by an entirely converse process. The œdema of the brain and venous stasis are here proportional to, and determined by, the diminution of arterial blood in the arterio-capillary systems. ..... Microscopical

[5] Harvey Cushing and James Bordley, jun.: Subtemporal Decompression in a Case of Chronic Nephritis with Uræmia, with Special Consideration of the Neuro-retinal Lesion, American Journal of Medical Sciences, October, 1908.

[6] C. E. Beevor: On the Distribution of the Different Arteries Supplying the Human Brain, Philosophical Transactions of the Royal Society, 1908, Series B, vol. cc., p. 15.

[7] Preliminary Communication upon the Changes in the Brain, Spinal Cord, Muscles, and other Organs found in Persons Dying after Prolonged Epileptiform Convulsions, Archives of Neurology, London, vol. i., p. 499.

observations show that the whole brain is permeated by a canalicular lymph system containing cerebro-spinal fluid, the large processes of the neurons lying in lymph spaces which are continuous with the perivascular lymphatics. These perineuronal spaces were very obvious in some of the cases of experimental anæmia." In this connexion it is a striking fact that, in his description of the photo-micrographs accompanying his paper, Mott comments on the close similarity between the appearance of the brain cells and perineuronal spaces in experimental anæmia of the brain (by ligature) and in status epilepticus.

These observations, both clinical and pathological, lead to the conclusion that the fundamental condition underlying the condition of status epilepticus is cerebral anæmia. It might be urged that, inasmuch as it is not probable that there is a great rise of cerebral pressure, the heart should be able to respond by more powerful contractions which would maintain the cerebral circulation (*vide* Harvey Cushing's observations). It is interesting to note in this connexion that the heart in cases of status epilepticus shows extreme fatty degeneration; thus Mott[8] has shown that "the œdema of the muscle substance of the heart is very striking upon microscopical examination; networks of capillaries are seen, small hæmorrhages are sometimes observed, and the fibres are separated from one another by a serous exudation. This of itself would embarrass the much over-worked organ; but the lymph around the muscle fibres no longer constitutes a normal environment, it contains excess of carbonic acid, deficient oxygen, and toxic fatigue products, the result of excessive muscular activity and imperfect metabolism. The fibres thus imperfectly nourished and oxygenated are the seat of an imperfect metabolism which is manifested upon microscopical examination by a lustreless appearance, indistinctness of striation, and accumulation of minute particles of fat in the substance of the fibres. ..... In seven cases of status epilepticus, and in a large number of cases of general paralysis dying after prolonged convulsive seizures, I have invariably found this fatty change in the heart and striated muscles."

THE EPILEPTIFORM SEIZURES OF GENERAL PARALYSIS.

Mott has shown that "œdema of the brain, owing to dilatation of the perivascular lymphatics, is a striking feature in general paralysis, and the water which can be extracted from the brain by placing it in a desiccator is larger in amount than in the normal brain. But venous congestion and œdema of the brain must be associated with arterial anæmia. ..... If all the arteries to a dog's brain be ligatured there is established an arterial anæmia, but the veins of the cortex will be found greatly congested, the perivascular lymphatics distended, and the motor cortex excitable, even hyper-excitable, to electric stimulation. This makes it probable that the epileptiform seizures of general paralysis are associated with, and probably dependent upon, venous congestions and stasis, arterial anæmia and increased excitability."

THE RÔLE OF THE SALIVA IN THE TRANSMISSION OF TUBERCLE.

BY NEWMAN NEILD, M.B., CH.B. VICT., M.R.C.P. LOND.,
SENIOR ASSISTANT PHYSICIAN TO THE BRISTOL GENERAL HOSPITAL; LECTURER ON PHARMACOLOGY AND THERAPEUTICS, UNIVERSITY COLLEGE, BRISTOL;
AND
E. V. DUNKLEY, M.B., B.S. LOND.,
LATE PATHOLOGIST TO THE BRISTOL GENERAL HOSPITAL.

To prevent the transmission of the tubercle bacillus from the tuberculous to the non-tuberculous and to maintain the general health of the non-tuberculous are the main principles in the prophylaxis of tuberculosis.

The danger of sputum as a carrier of tubercle bacilli is fully recognised and every case under proper treatment is educated in the care of the sputum. But we have been struck by the freedom with which the tuberculous use their saliva for purposes in no way connected with the digestion, and also by the fact that few, if any, tuberculous patients are warned against such uses. It is known that bacilli may be obtained from the mouth in the case of patients suffering from pulmonary tuberculosis, and it has even been recommended that mucus should be obtained from the larynx for examination in suspected cases where sputum is not available.

In order to find whether the saliva from the tongue was contaminated at all frequently by the tubercle bacillus we examined 50 cases of pulmonary tuberculosis, derived in part from amongst the out-patients of the Bristol General Hospital and in part from the Winsley Sanatorium. This series only included those cases in which the tubercle bacillus had been demonstrated in the sputum, cases, therefore, of open tuberculosis. The method adopted was to stroke the anterior part of the patient's tongue with the stick of a wooden match and apply the saliva obtained to an albuminised slide. The slide was then stained by the Ziehl-Neelsen method, each specimen being stained in separate bulk of stain, and all positives being examined by us both. In this way tubercle bacilli were demonstrated in 29 cases out of 50. Amongst the first 11 cases were three in which tubercle bacilli were not found in the saliva examined before expectoration, the bacilli only being found after an expectoration to order. Since the other 39 cases were examined with no regard to the time at which the patient expectorated or even coughed the first 11 cases will be brought into line if we consider these three as being negative, thereby reducing the number of positive cases to 26. It may be urged that many of these tubercle bacilli were innocuous but, on the other hand, inoculations, in all probability, would have demonstrated active bacilli where the Ziehl-Neelsen method of examination failed to demonstrate their presence and an even higher percentage of positives obtained. The average patient assumes, if indeed he thinks of it at all, that when he has expectorated the sputum the mouth remains untainted; he has been taught that the bacilli are in the sputum and he has flasked and pocketed the sputum. In cases in which the expectoration was recent the bacilli were found more frequently than in those cases in which it was not so recent. In some positive cases there had been no expectoration for an hour or more before the examination (e.g., Case 11, tubercle bacilli numerous; Case 15, tubercle bacilli scarce). In some instances where no expectoration had been noticed by the patient for some six or seven hours bacilli were found in the saliva (e.g., Case 9, few bacilli; Case 14, numerous bacilli). One patient in the sanatorium denied having had any cough or expectoration for many days, and yet a few bacilli were found (Case 13). On the other hand, where there was frequent profuse expectoration such as one may get from large cavities the bacilli might be scarce or even not found at all by this method of staining, a fact that will cause no surprise to those who have had some experience in the examination of sputum. We also noticed that specimens taken some hours after a meal were more likely to give a positive result than were those taken within an hour after a meal.

The uses to which the saliva is put are, unfortunately, numerous. To some of these we shall now refer. In this connexion some of the 50 cases are of interest.

Case 18.—The lead of a mechanical pencil was dropped on the floor of this patient's room. He kindly helped in the search, and being the first to catch sight of the object he licked his finger to assist adhesion and would have recovered the lead by that method had he not been prevented. An examination of his saliva was made. He admitted having an occasional cough, but stated that there had been no expectoration for a week or more. "Very numerous T.B." were found. He had just come in from the garden where he had been working with a rake, and we can only surmise the possibilities of the presence of "very numerous T.B." upon the handle of that implement.

Case 19.—A consumptive out-patient, placing his book before the physician, was about to turn the page with an adequately moistened finger when he was prevented. No examination was made at this time, but his name was found amongst those who had previously been examined with positive result.

Case 42.—Another consumptive out-patient with similar intentions had his saliva examined at once with positive result.

These three cases were of the labouring or mechanic class, so that one is not surprised at their use of saliva in operations requiring some delicacy of touch, bearing in mind the lavish way in which the hands are prepared for a firm grip of the

[8] Mott: Loc. cit., pp. 502, 503.

handle of an implement. But this use of the saliva for turning over the leaves of a book is not absolutely confined to the more uneducated classes. The danger of this practice is no imaginary possibility, but is so widely known that finger-dampers are provided for the clerks in many offices to obviate the use of the saliva. A medical man when dealing with a case of tuberculosis in a clerk inquires as to the presence of other cases of tuberculosis in the office or after the health of the clerk whose books his patient may have taken over. Moistening the fingers in order to obtain a firm grip of an implement is not unknown amongst well-educated men when the implement in question is a cricket bat or a tennis racquet. And the use of a cricket bat is not always confined to the owner. The sempstress often applies her saliva to both ends of the thread, first to facilitate threading the needle and then to form a knot on the other end. The observant can hardly claim that this practice is limited to the poor. We do not wish for a moment to suggest that every garment made by a person with open tuberculosis must be a "shirt of Nessus" in its effect, but not all needlework is washed before it is first used, and slight though the danger may be from this disagreeable habit it is a danger that might well be avoided.

The commonest use of saliva amongst the educated is to close envelopes and stick stamps, so common, indeed, that it would seem almost hopeless to attack this method. An equally convenient and secure form of envelope that would not require the use of the saliva or a damper would be appreciated by all of us. It may be urged that this method of using the saliva is a fairly safe proceeding, since any tubercle bacilli applied to the gum are securely sealed down. But observe the process more closely and it will be seen that the saliva often spreads beyond the gum or even the flap of the envelope. Some people, having a fastidious objection to the flavour of gum, prefer to apply saliva to that part of the envelope to which the flap is to adhere; some lick the corner of the envelope and apply the stamp somewhere in this moistened area; others apply the stamp face downwards upon the tongue, leaving it there until the gummed side becomes soft. So much for the idea that all bacilli are sealed down. We obtained envelopes which had been sealed down by consumptives and, cutting out the gummed portions together with a broad margin, washed them and examined for tubercle bacilli the centrifugalised deposit from the washings. The specimens were stained by the Ziehl-Neelsen method as before. The first specimen yielded various bacilli from the mouth, leucocytes and squamous epithelium. The second specimen showed tubercle bacilli. Again, we do not wish to suggest that this method is a fertile source of infection, even where the receivers open such envelopes at the breakfast table with their fingers or a prong of a fork. But where a patient has been taught, and rightly so, to expectorate all sputum, and he sends a licked envelope two or three times a week to the same correspondent, it must be admitted that the receiver runs a risk which he might reasonably be spared. And yet one of us, from his experience in sanatoriums in this country and on the continent, believes that it is the exception for patients to be warned on this point.

The danger of the use of saliva for "rubbing out" on a slate is so well known as to have helped in the abolition of slates from many schools. Children and some adults wet the point of lead pencils when they write with them, nor do they object when others use these pencils, the borrowers substituting their own saliva for that of the owners.

Several instances have been published in which tubercle has been inoculated by the saliva. Of those cases of inoculation that one of us has met with are the following. A child with lupus of the face admitted that her mother had sometimes cleaned the face with a handkerchief moistened with saliva, and in reply to a question as to whether her mother had a cough the child at once replied that the doctors said that her mother had consumption. A subsequent inquiry amongst out-patients showed that this indelicate attention was very frequent, many of the mothers admitting that they had used this method on occasions. Is this method of cleaning a child's face in an emergency entirely confined to the destitute?

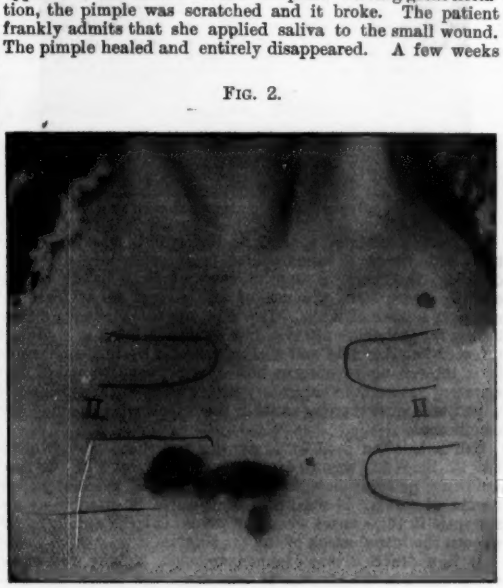
Another case is that of a patient who has had phthisis for four years. Some two or three years ago she suffered from a rash over her arms. The rash consisted of tiny red spots "not like nettlerash," although accompanied by intense itching, especially at night. She says that she scratched them and applied saliva to alleviate the irritation. There are a few slight scars marking the places where suppuration followed and on one of the scars is a ring of lupus nodules. (See Fig. 1.)

FIG. 1.

Lupus, inoculated by saliva, upon a scar, just above origin of the supinator longus. Right arm.

Another case of auto-inoculation is that of a patient who has had phthisis for some six months. In August, 1908, she had a pimple over the right margin of the sternum opposite to the second intercostal space. Causing great irritation, the pimple was scratched and it broke. The patient frankly admits that she applied saliva to the small wound. The pimple healed and entirely disappeared. A few weeks

FIG. 2.



Lupus inoculated by saliva spreading along second intercostal space.

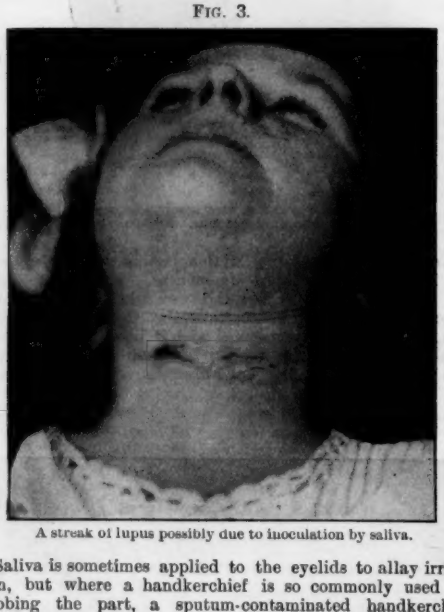
afterwards, in the same place, a small flat lump appeared under the skin. The skin over the lump became thin and red, and later a discharge broke through the centre of the area. The disease has spread for one and a half inches along the intercostal space and at the present time (December, 1908) there is an irregular line formed of thin red scar

tissue with one or two yellowish scabs upon it. Beneath the unchanged skin at the outer end of the line two small flat lumps can be felt. (Fig. 2.)

The difference in the form of skin tuberculosis in the above two cases of auto-inoculation may be due to difference in depth of the inoculation, or possibly to a difference in the variety of tubercle bacillus.

In another case of a patient, aged 13 years, the position of the lupus is at least open to the suspicion of having been caused by the use of saliva. The mother is healthy, but seven of the mother's brothers and sisters have died from consumption. The child herself has signs of phthisis at one apex. A linear scar two inches long runs across the neck at the level of the edge of the dress. A streak of lupus was removed from here three years ago and there is now a recurrence at one end of the scar. There is no other patch of lupus on the face or neck. No history can be obtained of the garments having rubbed the neck, but the habit of softening with saliva any rough and scratchy material which chafes the neck is too common to be dismissed as an unlikely cause. It is difficult to remember such simple actions, especially in a disease where cause and effect are separated by such a long latent period. (Fig. 3.)

FIG. 3.



A streak of lupus possibly due to inoculation by saliva.

Saliva is sometimes applied to the eyelids to allay irritation, but where a handkerchief is so commonly used for dabbing the part, a sputum-contaminated handkerchief entirely apart from the use of saliva must be at least as common a cause of lupus. Lupus of the nasal mucous membrane is probably always due to the use of a sputum-infected handkerchief and not to saliva. In this connexion it is interesting to observe how a child usually makes inspiratory rather than expiratory efforts when the nose is being wiped and must thereby assist in the infection of the mucous membrane.

Saliva is often used as a styptic, and those cases which Dr. R. B. Wild[1] recorded of lupus of the lobe of the ear following perforation were probably cases of inoculation by means of saliva, as we know that saliva is often used as a styptic in these cases when the wound is fresh and later to smooth the introduction of the ear-ring.

It is a practice very common amongst nursing women to apply saliva to the nipples to encourage the infant to take the breast. This must be looked upon as a possible source of infection in cases of tuberculosis of the breast, but what must be the almost inevitable result to the child of the tuberculous mother who moistens the nipple with her saliva? One great advantage of the boat-shaped bottle in the artificial feeding of infants is that it does not necessitate the nurse or mother drawing up the milk into the teat before introducing the teat into the mouth of the infant. This transference of the saliva, however, is an accidental use, but the teat both of the long-tubed and of the boat-shaped bottle is often moistened intentionally to encourage the child to accept it. Again, mothers and nurses often apply saliva to the rubber comforter for the same purpose. 50 out-patients were asked the following "leading" questions: "Were all your children bottle-fed?" If the answer was in the negative, then, "Did you find any difficulty in getting them to take the breast?" And then, "I suppose you always wet the nipple first with a finger moistened at the mouth?" It is probable that had one said "I suppose that you never wet the nipple with your saliva?" the proportion of affirmative answers would have been much smaller. However that may be, of the 50 mothers 41 had fed at least one child for a time at the breast; of these only three did not admit having moistened the nipple. One of these could not remember, another who was consumptive had just admitted that she had lost three children from tuberculosis, and the third mother was certain that she had never moistened the nipple. Amongst those who had so moistened the nipple two had lost several children from tuberculosis, the mothers being themselves tuberculous, one mother having lost all seven. Of the nine mothers who had never given the breast only one had not sucked or otherwise moistened the rubber teat. If the risk of infection bears any direct proportion to the amount of the saliva used, and as to this we can offer no data, then the breast-fed child would run a greater risk than the bottle-fed child where the mother was tuberculous. Some of these mothers mentioned, as a reason for not having given the breast to all their children, that they had suffered from "broken bosoms." To those who make a routine examination of the mouth in the out-patient department of a hospital such broken bosoms need little further explanation. In the case of the tuberculous mothers we readily grant that infection may be carried to the child in many other ways, but it would be difficult to find a more certain method, or one more easily obviated.

We do not state that the saliva is to be blamed as the means of contamination in a very large number of cases of pulmonary or other forms of tuberculosis. Such a statement might lead to a foolish scare on the one hand, or from such exaggeration, lead, on the other hand, to the neglect of easy and reasonable precautions. We sometimes overhear an argument used to encourage the nervous or discourage the particular, that we must all swallow or inhale many tubercle bacilli every day. Without accepting or disputing such a statement, we may fairly point out that the fact that you cannot make your boots absolutely clean should not prevent you from using the doormat. Do we not insist upon our consumptive patients expectorating their sputum, although we know that they must still continue to swallow large numbers of tubercle bacilli?

We would urge that all cases of pulmonary tuberculosis, at any rate, should be forbidden to close envelopes and stick stamps with their saliva and forbidden to moisten their fingers with saliva for any purpose whatsoever. There is little to be said in favour of such uses, and when we have admitted that they are convenient and very common, they remain disagreeable and dangerous. But since the non-tuberculous who moistens his fingers with saliva to turn the leaves of the office ledger or grip the handle of a spade immeasurably increases the risk to himself of the same habit in the tuberculous, and since the tuberculous patient has usually been included amongst the non-tuberculous for some months at any rate before his disease is discovered, some attempt should be made to reduce the frequency of this habit even if it is thought to be impossible to put an end to it. Surely it is not too much to ask that wherever there is an inkpot there should be a gum or finger damper, and that it should be taught in all schools that moistening the fingers with saliva is a dirty habit and a habit that is fraught with danger both to the possessor and to others.

Note.—Since writing the above one of us has met with two other cases of lupus of the face where there was a definite history of face cleaning with saliva by the pulmonary tuberculous, but in neither case was a history of previous breach of surface obtainable. No doubt in the skin department of a hospital many more cases would have been met with.

Clifton.

[1] Some Sources of Infection in Cutaneous Tuberculosis, Brit. Med. Jour., 1899.

TWO UNUSUAL CONDITIONS OF THE GALL-BLADDER.

BY HUGH LETT, M.B., CH.B. VICT., F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE LONDON HOSPITAL.

CASE 1. *Axial rotation of the gall-bladder; strangulation.*—The patient, a woman, aged 72 years, was admitted to the London Hospital on August 1st, 1905, with the following history. Three days previously she had been suddenly seized with severe pain in the right hypochondrium which persisted until her admission to hospital. She had vomited four or five times and the bowels had not acted since the beginning of the attack. She had never had a similar attack before, had never been jaundiced, and so far as she knew had never passed any gall-stones. On admission her pulse was small and regular, and its rate was 100 per minute; her temperature was 101° F. She was not jaundiced. There was great tenderness and rigidity in the right hypochondrium, and a rounded tumour could be felt in the region of the gall-bladder; it was dull on percussion, and the dulness was continuous with the liver dulness. The lower abdomen was distended. A diagnosis of acute cholecystitis was made.

A vertical incision was made over the swelling. On opening the abdomen the tumour was seen to be an enlarged gall-bladder with numerous adhesions to the omentum and hepatic flexure of the colon. The gall-bladder itself was black, the size of a large pear, and there were a few patches of lymph on it and also on the upper surface of the liver. The adhesions were all sufficiently recent to admit of their being broken down by the finger; none were ligatured. The gall-bladder was tapped and a black fluid composed of altered blood and a little bile was drawn off. The wall of the gall-bladder was much thickened and stiff from hæmorrhage into it. On palpating the cystic duct a nodule was felt which I thought at first might be a gall-stone or possibly a nodule of carcinoma, but on separating the adhesions I found that it was due to axial rotation of the gall-bladder on the cystic duct, the nodule having been produced by the twisting of the duct. The twist was easily undone and consisted of four half turns from left to right. The gall-bladder, with part of the cystic duct, was rapidly excised and the stump of the duct was ligatured and covered by peritoneum. No gall-stones were found in the gall-bladder or in any of the bile-ducts. A tube containing a gauze drain was passed to the stump of the duct through a stab wound in the loin and the anterior incision was closed. The patient collapsed suddenly 12 hours after the operation and in spite of treatment died a few hours later.

At the post-mortem examination no gall-stones were found. The kidneys were markedly granular, but otherwise nothing of importance was discovered. On examining the gall-bladder after its removal it was found to be completely covered by peritoneum and was attached to the liver only by a narrow mesentery which left the gall-bladder in the neighbourhood of the neck and the cystic duct. The specimen is now in the London Hospital Museum, No. 1395E.

The relation of the gall-bladder to the liver is variable. In the great majority of cases it lies in a shallow fossa on the under surface of the right lobe of the liver and only the fundus and lower surface are covered by peritoneum. In other cases a bridge of liver tissue crosses it, or it may be almost completely surrounded by peritoneum and have a distinct mesentery. In 100 dissections of the gall-bladder and bile-ducts Brewer[1] found that in five cases the gall-bladder was only attached to the liver by means of a double fold of peritoneum which formed a distinct mesentery. Three of these, however, had a second mesentery which was attached to the duodenum and transverse colon and which was really an extension outwards of the lesser omentum. It is therefore exceptional to find a gall-bladder so surrounded by peritoneum that it is attached to the liver by a definite mesentery, but it is extremely rare to find one which is so completely surrounded by peritoneum that it is only attached to the liver by a narrow mesentery which leaves the gall-bladder in the region of its neck and does not extend on to its body at all. When this condition obtains, the gall-bladder swings free in the abdominal cavity attached only by a pedicle composed of this short mesentery with the cystic duct and vessels, so that axial rotation of the gall-bladder with torsion of the pedicle is not unlikely to occur.

Wendel[2] has reported a case of axial rotation of the gall-bladder also. The patient was a woman, aged 23 years, who first came under observation in November, 1895, for some gynæcological disorder. A moveable ovoid swelling was then discovered in the mesogastrium extending into the left lumbar region, but there were no symptoms which could be associated with it. In September, 1896, she had a severe attack of cholecystitis, and perforation of the gall-bladder probably took place. She refused to submit to operation, however, until the following March, when she could endure the pain and discomfort no longer. At the operation a large abscess was found, which communicated with the gall-bladder through a large perforation on its postero-external aspect. The gall-bladder contained many gall-stones, but a few had escaped and were lying loose in the abscess cavity. The cystic duct was extremely long; it measured three and a quarter inches from the anterior border of the liver to the neck of the gall-bladder and was twisted many times. The gall-bladder was completely surrounded by peritoneum, but the cystic duct had a mesentery about two inches long which was attached to the under surface of the liver. The length and extreme twisting of the duct are well shown in the illustration given in Wendel's article. This illustration is also represented in Bland-Sutton's "Gall-stones and Diseases of the Bile-ducts."

While this case described by Wendel resembles Case 1, it differs from it in many respects. In both cases the gall-bladder was entirely surrounded by peritoneum, and was attached to the liver by a narrow mesentery which, with the cystic duct and vessels, formed a pedicle, and in both cases there was rotation of the gall-bladder with torsion of the pedicle. In Wendel's case, however, the patient suffered from gall-stones, and acute cholecystitis with perforation of the gall-bladder occurred; the cystic duct, moreover, was extraordinarily long. He does not say whether there was any evidence of previous hæmorrhage into the wall of the gall-bladder, but only that, although the duct was twisted many times, gangrene had not supervened. It is remarkable that gangrene did not occur, for with such twisting of the duct the blood-supply through the cystic artery must have been cut off. Probably the nutrition of the gall-bladder was maintained by means of the adhesions between it and neighbouring structures, as is frequently the case in the somewhat analogous condition of torsion of the pedicle of an ovarian cyst. In Case 1 there were no gall-stones and the cystic duct was not unusually long, but torsion of the pedicle caused obstruction of the cystic vessels and strangulation of the gall-bladder.

CASE 2. *Primary carcinoma of the gall-bladder 21 months after cholecystotomy.*—The patient, a woman, aged 37 years, was admitted to the London Hospital, under the care of Mr. Jonathan Hutchinson, jun., on Nov. 19th, 1906. During the previous two years she had had four characteristic attacks of gall-stone colic accompanied by jaundice.

Laparotomy was performed by Mr. Hutchinson. The gall-bladder was opened and three large faceted gall-stones were removed; it also contained mucinous fluid and a large quantity of débris which had to be wiped from the mucous membrane of the gall-bladder. No stones were found in the hepatic or common ducts. The gall-bladder was drained and the patient made a good recovery. She remained quite well until May, 1908, when she began to have continuous pain in the right hypochondrium, with severe exacerbations every day. The pain was sharp and cutting in character and she described it as passing round the right side to the back. Recently it had been so bad that she could get no rest. There had been no jaundice since the operation.

The patient was readmitted to the hospital on August 6th, 1908. On examining the abdomen a rounded swelling was found in the right hypochondrium lying under the scar of the previous operation. It was smooth in outline, adherent to the anterior abdominal wall, and tender on palpation. There was no free fluid in the abdomen.

A vertical incision was made into the swelling and the diagnosis of malignant disease of the gall-bladder was confirmed. The wound was closed and two oval incisions were made, which were so placed that the gall-bladder and the

[1] Annals of Surgery, vol. xxix., p. 721.

[2] Ibid., vol. xxvii., p. 199.

overlying part of the abdominal wall to which it was adherent could be removed in one piece. There were numerous adhesions between the gall-bladder and the omentum; these were not broken down, but the gall-bladder was freed by dividing the omentum between ligatures. It was then found that the growth had passed beyond the gall-bladder and had invaded the adjacent part of the liver, and accordingly a wedge-shaped piece was excised from the right lobe, its base measuring about two and a half inches. The wound in the liver was closed by means of catgut sutures. The subsequent progress of the case was uneventful with the exception of an attack of bronchitis which slightly retarded convalescence. The wound healed by first intention.

The specimen was composed of the gall-bladder and the adherent omentum, the overlying part of the liver, and part of the cystic duct. The walls of the gall-bladder were very much thickened and were obviously the seat of malignant disease which extended into the cystic duct. The growth projected into the cavity of the gall-bladder and partly filled it. There were no gall-stones in the gall-bladder or bile-ducts. Microscopically the growth was a columnar-celled-carcinoma.

Two similar cases have been reported. Lawford Knaggs[3] operated upon a woman, aged 69 years, in September, 1902. The gall-bladder was distended to the size of a fist and contained foul-smelling fluid with some pus. A single stone was felt in the cystic duct. This was squeezed back into the gall-bladder and was removed. The gall-bladder was very long and supple and not noticeably thickened; it was drained. The fistula persisted until the end of 1903, when it closed. Shortly afterwards the patient came under observation again on account of pain in the gall-bladder region which she thought was due to the closing of the fistula. Some thickening was felt under the scar of the old operation. On Jan. 23rd, 1904, a small incision was made over the closed sinus into the gall-bladder and some mucus and a little pus escaped. The mucous membrane was sutured to the skin. The patient ultimately died on Feb. 18th. At the post-mortem examination the walls of the gall-bladder were seen to be infiltrated with growth to the thickness of nearly half an inch, the growth extending to and involving the cystic duct. The growth involving the cystic duct had pressed upon and partially obstructed the commencement of the common duct. Above this stricture the ducts were markedly dilated and were the seat of suppurative cholangitis. No gall-stones were found. Microscopical examination of the growth showed it to be a columnar carcinoma.

Mayo Robson[4] performed cholecystotomy upon a woman, aged 57 years, in February, 1902. A stone was found in the cystic duct and was removed. In October, 1903, the gall-bladder and adjacent part of the liver were successfully excised. The gall-bladder was of the size of a small hen's egg and full of solid material. On incising it the swelling was found to be new growth which was infiltrating the adjacent parts of the liver.

The close connexion between carcinoma of the gall-bladder and gall-stones is now generally recognised, and Siegert[5] says that in 95 per cent. of cases of carcinoma of the gall-bladder and adjacent portions of the liver the malignant change is due to the chronic irritation of gall-stones. The frequency with which carcinoma of the gall-bladder has developed in connexion with gall-stones is often brought forward as one of the reasons for excising the gall-bladder in all cases when operating for gall-stones. On the other hand, when gall-stones by their irritation have given rise to carcinoma of the gall-bladder they are practically always found in the malignant gall-bladder, and it is extremely rare for carcinoma to follow cholecystotomy.

In April, 1905, G. R. Slade[6] published a paper containing some remarkable facts in connexion with gall-stones and malignant disease which he had observed while working in the Pathological Institute at the London Hospital. He particularly drew attention to the importance of chronic thickening of the wall of the gall-bladder, and pointed out that it should be viewed with the gravest suspicion and not lightly regarded as being due to chronic inflammation. In 12 cases the wall of the gall-bladder presented an appearance which at the time of the necropsy was described as chronic inflammatory thickening. In five of these cases carcinoma was found on microscopical examination. The remaining seven unfortunately were not examined microscopically, but to the naked eye they presented an appearance exactly similar to that of the five cases which were proved to be carcinomatous. He added that since he began in all such cases to examine the wall of the gall-bladder as a routine, he had in no instance failed to find carcinoma.

A few weeks after the appearance of Slade's paper H. A. T. Fairbank[7] briefly reported a case which had been operated upon by Mr. Stanley Boyd. Two gall-stones were impacted in the neck of the gall-bladder, which was kinked. Cholecystectomy was performed as it was thought to be the most satisfactory way of dealing with the case. The wall of the gall-bladder was thickened to a uniform degree. On microscopical examination it proved to be carcinomatous.

In an excellent chapter on cholecystectomy, Moynihan,[8] in pointing out that one of the arguments for cholecystectomy as opposed to cholecystotomy is based on the fact that gall-stones are responsible for so many cases of primary malignant disease of the gall-bladder, says that it must be shown that carcinoma of the gall-bladder has occurred after cholecystotomy, and this the cases reported by Lawford Knaggs, Mayo Robson, and myself certainly appear to do. It is remarkable that each of these three cases should have come under notice at about the same interval after the primary operation—viz., 15, 20, and 21 months respectively, and it raises the question whether early carcinomatous changes could have been already present in the gall-bladder at the primary operation. If so, the general rule that carcinoma of the gall-bladder does not occur after cholecystotomy holds good; but even if the gall-bladder were free from carcinoma at the time of the primary operation these three cases are in such an extremely small ratio to the cases which have not developed carcinoma after cholecystotomy that they cannot be regarded otherwise than as exceptions to the general rule. They cannot alter the generally accepted indications for cholecystectomy, but only serve to accentuate the importance of carefully examining the gall-bladder in every operation for gall-stones, and of regarding cholecystectomy as an operation of necessity and not of choice if there is any thickening or ulceration of its wall, or if its appearance or consistency is in any way suspicious.

I am much indebted to Mr. C. W. Mansell Moullin and Mr. Jonathan Hutchinson, jun., for whom I was acting when these two cases were admitted to hospital, for permission to record them.

Queen Anne-street, W.

[3] THE LANCET, April 16th, 1904, p. 1054.
[4] Diseases of the Gall-bladder and Bile-ducts.
[5] Virchow's Archiv, Band cxxxii., Heft 2, 1893.
[6] THE LANCET, April 22nd, 1905, p. 1062.
[7] THE LANCET, June 3rd, 1905, p. 1542.
[8] Gall-stones and their Surgical Treatment.

A CASE OF VASCULAR DEGENERATION: A STUDY IN CARDIAC ARRHYTHMIA.

BY A. M. GOSSAGE, M.D. OXON., F.R.C.P. LOND.,
PHYSICIAN TO OUT-PATIENTS, WESTMINSTER HOSPITAL.

THE patient, a German, aged 66 years, from whom the accompanying tracings were obtained, went to the Westminster Hospital complaining of general weakness, of dyspnœa on exertion, and of pain in the chest. On examination he was found to be a feeble man of spare habit, whose radial arteries were decidedly atheromatous, while the pulse was very irregular. It was noticed that there were frequent "intermissions" and that at times the rate of the pulse was infrequent and at other times of normal frequency, the less frequent rate being exactly half the more frequent. The chest was emphysematous and the heart was somewhat overlapped by lung. The apex beat was about half an inch outside the normal position. On auscultation the first sound was shorter than normal but there was no added sound. Not infrequently an extra-systole could be heard—i.e., a premature feeble systolic sound followed by a long pause. Beside these there were numerous pauses or intermissions during which no feeble sound was heard. During auscultation the halved rhythm did not happen to occur. The case was diagnosed as general vascular degeneration affecting the coronaries as well as other arteries. It was considered that owing to insufficient blood-supply to the cardiac walls

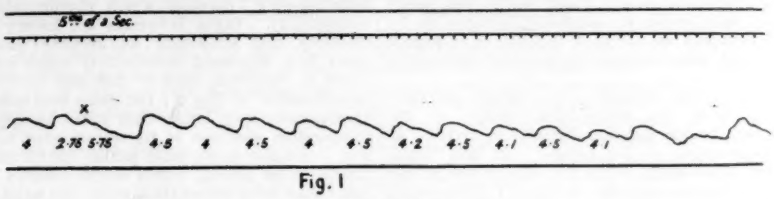


Fig. 1

Alternating action.

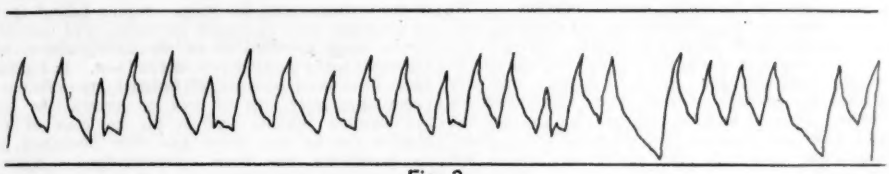


Fig. 2.

Delayed beat after every second normal beat.

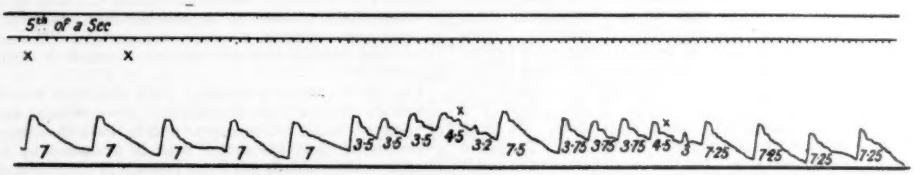


Fig. 3

Halved rhythm.

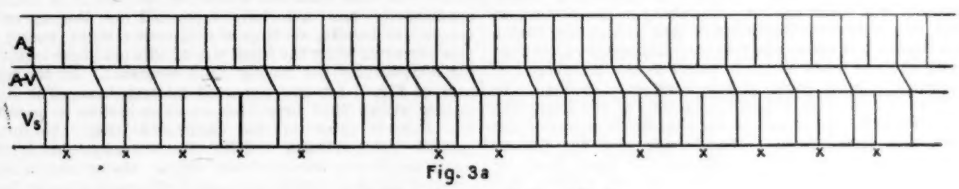


Fig. 3a

Diagrammatic representation of Fig. 3.

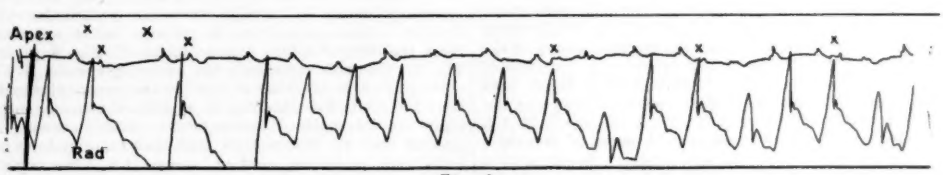


Fig. 4.

Delayed small beats preceded by smaller beats.

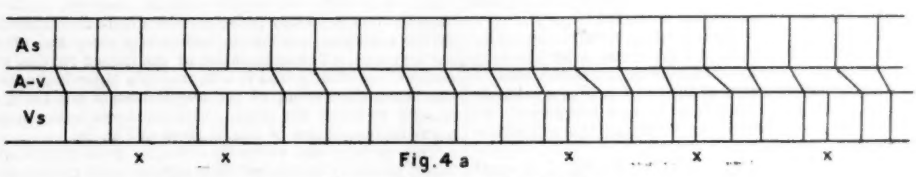


Fig. 4a

Diagrammatic representation of Fig. 4.

there was fibrosis of the heart and loss of contractile power in its muscle. The pain in the chest, which was partly constant, partly paroxysmal in character, brought on by exertion, was regarded as being of the nature of angina pectoris. This view was confirmed by the relief afforded by nitroglycerine.

Numerous tracings were taken from the patient, and these were interesting from the complicated nature of the irregularity of the rhythm and the difficulty in arriving at a correct interpretation of its causes. It was found necessary to take the tracings when the patient was sitting up in a chair, as the irregularity completely disappeared when he was lying down. No tracing could be obtained from the jugular vein except in the horizontal position and then not a satisfactory one; this, however, showed that the auricles were beating in their normal relation to the ventricles and that the interval between the auricular beat and the ventricular was of the normal length. Owing to the emphysematous condition of the lungs it was very difficult to get a tracing from the apex, and a cardiogram was only obtained after the patient had been under observation for several weeks. Thus at first the only tracings showing the irregularity were those obtained from the radial artery alone. From these it was possible to draw certain conclusions, but there were many doubtful points which were only cleared up by the cardiogram.

To begin with, the tracings showed a fair number of extra-systoles. In some of these the compensatory pause was complete, in others it was incomplete, which means that some of the extra-systoles were of the ventricular type, others of the auricular. The majority had, however, a complete compensatory pause, and so were of ventricular origin. An example is shown in Fig. 1, where the premature systole *x* is followed by a pause of such length that the sum of the intervals before and after it was equal to the period (8·5 fifths of a second) occupied by two normal beats. On looking at Fig. 1 another irregularity may be noticed. The beats are alternately large and small, but the pause before each small beat is longer by one-tenth of a second than that after it. The small beat here cannot be an extra-systole, since extra-systoles are always premature, whereas here the small beat is delayed. This is, then, a true alternating action of the heart, the beats occurring at regular intervals, but being alternately larger and smaller. The delay in the occurrence of the small beat in the radial is due to the fact that a feeble contraction takes longer to open the aortic valves than a strong one and takes longer to travel to the periphery; at the heart the beats occur at equal intervals of time. In animal experiments an alternating action of the heart has been shown to be due to loss of the contractile power of the muscle, and Hofmann and Wenckebach give the following explanation of its occurrence:—"Each beat of the heart destroys the contractility of the muscle and after the beat this contractility is gradually restored, but reaches its full extent before the arrival of the next beat. Slight variations in the length of the diastole make no difference in the size of the subsequent beat. Where contractility is depressed it takes longer to recover and has not fully recovered before the commencement of the next systole. Under these circumstances any increase in length of the diastole will be followed by a larger beat owing to the better recovery of the contractility; any decrease of diastole will be followed by a smaller beat. A large beat encroaches on the subsequent period of rest since it is not only larger in size but lasts longer. Hence after a large beat there is a shorter period of rest which, with depressed contractility, will cause the next beat to be small: the period of rest after this would be longer and so the next beat larger and the next pause shorter. Thus there would be alternately large and small beats occurring at regular intervals once this abnormal rhythm is started."

It is not surprising that an alternating action is specially prone to start with the large beat that occurs after the long compensatory pause after an extra-systole, as is the case in Fig. 1. An alternating action of the heart is thus a valuable sign of depressed contractility in human beings and its presence in this case confirms the view that the contractile power of the cardiac muscle is deficient.

In other tracings from the patient, as in Fig. 2, a small delayed beat is found after every second normal beat instead of there being an alternating action. Theoretically, it is difficult to account for this small beat as being due to depressed contractility unless there were some outside influence—e.g., nervous—which rhythmically lessened the contractility. Vagus influences are known to depress contractility, and Mackenzie[1] has recorded cases where small beats from depressed contractility occur quite irregularly. There is, however, another difficulty with regard to this interpretation of Fig. 2; the delay before the small beat is exceptionally long, longer than would be expected from the comparative slowness of its transmission to the wrist. In Fig. 2 are also shown some pauses, double the length of the normal pulse period, which might possibly be due to the small beat being too small to reach the wrist or to the small beat being entirely left out. In other tracings (see Fig. 3) there is a halved rhythm which one might explain as an alternating action where the small beat was either left out or too small to reach the wrist. Such a halved rhythm can be obtained with depressed contractility in animal experiments, being preceded by an alternating action in which the small beat gradually gets less and less. In human beings cases have been recorded of isolated intermissions of the pulse apparently due to loss of contractile power in the cardiac muscle, but so far no case of a halved rhythm due to this cause has been described, although its possibility has been acknowledged. Against this interpretation it might be urged that to produce a halved rhythm the contractility would have to be very gravely depressed, and yet my patient was capable of walking about. In two places marked *x* in the tracing Fig. 3 it will be noticed that a delayed small beat occurs and that in the first of these there appears to be another small beat before the delayed one. This is, however, not certain. The numbers below the tracing indicate the pulse periods in fifths of a second.

Fig. 4, in which a tracing from the apex was at last obtained, clears up all obscurities. Here several examples of delayed small beats appear and in each case the cardiogram shows that the small beat is preceded by another smaller beat, which is not large enough to produce a wave at the wrist. These beats, marked *x* in the apical tracing, are evidently interpolated extra-systoles. Interpolated extra-systoles are rare, but Mackenzie has shown that they do occur, particularly in senile hearts. The reason for the delay in the beat after these interpolated extra-systoles is that the conductivity has not fully recovered in the auriculo-ventricular bundle, so that the stimulus takes longer to pass across it, while the small size of this next beat is due to the contractility not having fully recovered. In the early part of Fig. 4 are two apparent intermissions. The apex tracing shows that here also an extra-systole is present, but this is later in its occurrence than the interpolated extra-systoles. Still the extra-systole is too small to give a wave at the wrist. Owing to the comparative lateness of this extra-systole the next stimulus from the great veins and auricles finds the properties of the ventricular muscle insufficiently recovered for a response to take place and a beat is left out, there being a full compensatory pause as usually occurs in ventricular extra-systoles. These points can be perhaps better appreciated from the diagrammatic representation of Fig. 4 given in Fig. 4a, where *As* represents the auricular systole, *A-V* the auriculo-ventricular interval, and *Vs* the ventricular systole. Here the marked lengthening of auriculo-ventricular interval after the interpolated extra-systoles is well shown. This tracing favours Mackenzie's view that extra-systoles start from the primitive cardiac tissue (i.e., the auriculo-ventricular bundle and its continuations) and that the cause of the compensatory pause after a ventricular extra-systole in man is that in these cases the conductivity of the bundle is depressed and has not sufficiently recovered to let the next stimulus through. It is just possible, however, in this case that the compensatory pause may be due to the contractility of the ventricles not having sufficiently recovered after the extra-systole. The explanation of the halved rhythm in this patient is evidently that it is in reality a bigeminal action of the heart, the second of the coupled beats not being large enough to reach the wrist. This is shown in the diagrammatic representation of Fig. 3 given in Fig. 3a.

This patient was evidently suffering from fibrosis of the heart, probably associated with atheroma of the coronaries. In consequence of this the contractile force of the muscle

[1] Mackenzie: Diseases of the Heart, p. 210

was deficient, leading to the pulsus alternans and to the attacks of angina pectoris. The fibrosis had probably invaded the *a.-v.* bundle, causing an increased irritability and hence numerous extra-systoles arising in the primitive tissue of which the bundle is composed. An important point to observe is the difficulty of the interpretation of the radial tracing alone, whereas when a simultaneous tracing was obtained from the apex to compare with the radial, the causation of the irregularity became quite clear.

Upper Berkeley-street, W.

SOME APPLICATIONS OF THE PRECIPITIN REACTION IN THE DIAGNOSIS OF HYDATID DISEASE.[1]

BY D. A. WELSH, M.A., B.SC., M.D. EDIN.;
H. G. CHAPMAN, M.D., B.S. MELB.;
AND
J. C. STOREY.

(*From the Physiological and Pathological Laboratories of the University of Sydney.*)

Results previously obtained.—In January, 1908, two of us[2] published an account of our experience with the precipitin reaction in hydatid disease, and quoted nine consecutive and unselected cases of hydatid invasion in all of which a well-marked precipitin reaction was obtained. In eight of these cases blood from the hydatid patient was collected in sterile glass pipettes on the morning of the day of operation; the hydatid fluid or cysts were obtained in sterile flasks in the afternoon; the patient's serum and the hydatid fluid were allowed to stand overnight in a cool chamber; and the test was made next morning about 24 hours after the blood had been collected. Control sera from healthy persons were taken at the same time as the sera to be tested and were kept in the same manner. From six to 12 drops of serum were shaken up with one cubic centimetre of clear hydatid fluid, precautions to minimise bacterial infection being taken, and the tubes were allowed to stand for 24 hours at room temperature before the precipitates were read. In these circumstances, with one exception, the patient's serum never failed to give a positive reaction with the hydatid fluid removed from his tissues. The single exception, however, yielded a precipitate when the patient's serum was tested with the hydatid fluid obtained from another patient. While this was our usual procedure, we also tested the serum of some of the patients, collected before operation, with hydatid fluids taken from other patients, and we obtained positive precipitin reactions in cases in which subsequent operation revealed undoubted hydatid invasion, and negative precipitin reactions in doubtful cases in which at operation hydatid cysts were not found. Notwithstanding our small series of cases, the fact that in every case the presence of the reaction corresponded with the presence of hydatid cysts, and the absence of the reaction with the absence of cysts, led us to the conclusion that in the precipitin reaction we had a valuable aid to the diagnosis of hydatid disease. We must, however, emphasise the fact that this striking evidence of the correlation of a specific precipitin reaction with hydatid invasion was obtained in the most favourable conditions of experiment, since usually the serum and the hydatid fluid were taken from the same patient and tested within 24 hours, or, when the serum and the hydatid fluid were obtained from different patients, the hydatid fluid had not often been kept for more than a few days.

Object of the present paper.—It was obvious, however, that if the test was to be of general value as a means of diagnosis we must have a method of storing for considerable periods of time hydatid fluid in such a form that it would be capable of giving a well-marked reaction with the sera of patients suffering from hydatid disease, and that it would not yield any reaction with sera obtained in other conditions of disease. Our present communication, which is of the nature of a progress report, deals mainly with the interactions of hydatid fluids (*a*) not derived from the patient whose serum was being tested, (*b*) of longer standing than those used in our first series of cases, and (*c*) subjected to various methods of treatment in order to preserve them in a sterile condition for many months. The conditions of experiment were, therefore, less favourable than in our first series of cases, and we may at once state that in this second series the amount of the precipitum in positive cases was on the whole smaller than in our first series, and that some cases of hydated invasion failed to give a satisfactory reaction with the hydatid fluids employed by us. Nevertheless, in no single instance did we obtain a positive reaction where hydatid invasion was afterwards proved not to exist, and we were able to give a positive diagnosis in some cases in which the clinical evidence was on the whole opposed to the probability of hydatid disease, our diagnosis being confirmed by subsequent operation.

Data on which paper is based.—Exclusive of control observations, this paper is based on 50 precipitin reactions tested in regard to 36 patients known or suspected to harbour hydatid cysts. Of these patients 20 were definitely proved to be infested by hydatids and 30 precipitin tests were carried out in regard to them in addition to the usual controls. The analysis of these 30 reactions, the nature of the hydatid fluids employed, and the results obtained constitute the substance of our paper. We may note, however, that of the other precipitin tests 11 were conducted with the serum of ten patients from whom hydatids were in all probability absent, since an operation, or the subsequent history, revealed the presence of some other condition (new growth, suppuration, calculus, &c.) sufficient to account for the symptoms. In all of these cases the precipitin reactions were negative. The remaining nine precipitin tests were made with the serum of six patients in whom an operation, or the progress of the case, was inconclusive as regards the presence or absence of hydatid invasion. Of these doubtful cases two gave a slight positive reaction and four a negative reaction. Since the diagnosis was doubtful we have not dealt further with this group of cases.

List of 20 Cases Investigated in which Conclusive Evidence of Hydatid Invasion was Obtained at Operation or Otherwise.

Case 1.—Male, 23 years; large single cyst of liver with clear contents.
Case 2.—Female, 40 years; multiple suppurating cysts of liver.
Case 3.—Female, 24 years; hydatid of liver.
Case 4.—Male, 39 years; multiple cysts in muscles of back; cysts densely matted and packed with minute secondary cysts.
Case 5.—Female, 12 years; multiple cysts of kidney.
Case 6.—Female, 28 years; large single cyst of liver with clear contents.
Case 7.—Male, 26 years; multiple cysts in kidney of at least ten years' duration.
Case 8.—Male, 69 years; multiple small cysts in liver.
Case 9.—Male, 39 years; cyst on under surface of liver compressing portal vein and simulating cirrhosis of liver.
Case 10.—Female, 18 years; large cyst of liver with clear contents.
Case 11.—Male, 31 years; cyst behind liver.
Case 12.—Male, 11 years; suppurating hydatid in left iliac region.
Case 13.—Male, 42 years; large cyst of liver with clear contents.
Case 14.—Female, 50 years; large, shrunken, degenerated cyst of liver with caseous, bile-stained contents.
Case 15.—Female, 28 years; medium cyst of liver with clear fluid contents.
Case 16.—Male, 42 years; hydatid of liver.
Case 17.—Male, 35 years; hydatid of lung (?); no operation was performed, but patient coughed up a piece of hydatid membrane.
Case 18.—Female, 12 years; cyst of liver with clear fluid contents.
Case 19.—Female, 49 years; multiple cysts of liver, spleen, and peritoneum.
Case 20.—Male, 22 years; large cyst of liver with clear contents.

Analysis of the precipitin reactions obtained with various hydatid fluids tested with the sera of the patients in whom the presence of hydatid cysts was conclusively proved.—The tests may be arranged in the following groups according to the nature of the hydatid fluid employed in the interactions.

Group I.—In this group of seven tests we repeated the methods adopted in our previous investigation of allowing the serum of the patient to interact with the fresh untreated hydatid fluid taken from the cysts harboured by himself, or with similar fluid collected from another patient. In every instance but one definite evidence of a precipitate was obtained in 24 or 48 hours at room temperature. In two cases the precipitate was very slight, but distinct in comparison with the control tubes; in two cases the precipitate was well marked; and in two it was massive. In one case of long-standing hydatid invasion, Case 7, the reaction was indeterminate.

1. One cubic centimetre of fresh hydatid fluid from Case 4 interacting with nine drops of serum from the same case taken just before operation gave a well-marked precipitate.

[1] Communicated to the Australasian Medical Congress, Melbourne, October, 1908.
[2] Welsh and Chapman: Australasian Medical Gazette, 1908, and THE LANCET, May 9th, 1908, p. 1338.

2. One cubic centimetre of fresh hydatid fluid from Case 6 interacting with nine drops of serum from the same patient before operation gave a slight positive reaction.
3. One cubic centimetre of hydatid fluid from Case 6 passed through a Chamberland filter interacting with 16 drops of serum from the same case seven days after operation yielded a very large precipitate of four millimetres depth.
4. One cubic centimetre of fresh hydatid fluid from Case 7 interacting with 12 drops of serum from the same case collected before operation gave an indeterminate reaction.
5. One cubic centimetre of fresh hydatid fluid from Case 7 interacting with 12 drops of serum taken before operation from Case 8 gave a well-marked reaction.
6. One cubic centimetre of hydatid fluid from Case 18, collected sterile and kept on ice, interacting with 11 drops of serum, taken from the same case five days after operation, gave a large precipitate exceeding two millimetres in depth.
7. One cubic centimetre of hydatid fluid from Case 18 kept sterile on ice for five days interacted with 11 drops of serum from Case 19 before operation and gave a slight positive reaction.

Group II.—The tests in this group were conducted with the fluid obtained from a large hydatid cyst of the liver in Case 1. The clear fluid was passed through a Chamberland filter, became accidentally infected, and was filtered again, thereafter remaining sterile. After the second filtration, and six days after removal from the patient, quantities of the fluid amounting to three cubic centimetres and four cubic centimetres were put into sterile tubes without further addiment, the tubes were plugged and allowed to stand at room temperature. It was then noticed that a deposit began slowly to separate out from the hydatid fluid. For a few days no deposit was seen at the foot of the tubes; by the end of a week a slight trace of deposit was visible; by the end of a month well-marked deposits were present, the fluid remaining quite sterile. With this fluid we tested the serum from each of two hydatid patients (other than the patients from whom the fluid had been obtained), but in each case the result was indeterminate, since the deposit was too scanty to warrant a positive diagnosis being made. Owing to its failure to elicit definite precipitates from the sera of two hydatid patients this fluid was discarded.

1. One cubic centimetre of hydatid fluid from Case 1 as above, six days after removal, interacted with 12 drops of serum from Case 2, collected one month after operation while small cysts continued to drain away from the wound. A large quantity of serum was obtained and four similar reactions were investigated, the tubes being allowed to stand at room temperature for 24 hours, at 37° C. for one hour, at 45° C. for one hour, and at 60° C. for one hour, but in every case the result was indeterminate.
2. Two cubic centimetres of hydatid fluid from Case 1 as above interacted with eight drops of serum from Case 3 before operation, but again the result was indeterminate.

Group III.—A saline extract of hydatid membrane was used in the third group of tests. The membrane was dried in a desiccator over calcium chloride and at a temperature of 37° C. Six grammes of dried membrane were ground up in a mortar and extracted for 48 hours with 300 cubic centimetres of a 0·75 per cent. sodium chloride solution. The extract was then passed through a Chamberland filter. With the filtered extract was tested the serum from each of four hydatid patients, but in each case with negative results. It must be added, however, that in one instance, Case 5, the serum was not tested until three weeks after operation and only four drops were obtained; in another instance, Case 6, the serum before operation gave only a slight reaction with the fresh hydatid fluid from the same patient; in a third, Case 7, the reaction of the serum with the fresh fluid from the same patient was indeterminate; and in a fourth, Case 13, the serum was not otherwise tested.

1. One cubic centimetre of extract of hydatid membrane interacting with four drops of serum from Case 5 collected three weeks after operation while cysts were still being discharged gave a negative reaction.
2. One cubic centimetre of extract interacted with nine drops of serum from Case 6 before operation to give a negative reaction.
3. One cubic centimetre of extract interacted with 12 drops of serum taken before operation from Case 7 with a negative result.
4. One cubic centimetre of extract interacting with nine drops of serum from Case 13 gave a negative reaction.

Group IV.—The tests in this group were carried out with the hydatid fluid obtained from a liver cyst in Case 6. The clear fluid was passed through a Chamberland filter and thereafter remained sterile. It was stored in small flasks, and, after the lapse of a month, it was noticed that an abundant flocculent deposit had separated out in all the flasks, the superfluid remaining clear and sterile. This fluid had been tested with serum from the same patient one week after operation and gave a very large precipitate (cf. Group I., No. 3). It was then used for purposes of diagnosis to test the serum taken before operation from seven different hydatid patients, and gave distinct positive reactions with four of these and indeterminate reactions with the remaining three, in one of which the only cyst found was shrunken and degenerated. In two of the positive cases the circumstances were of more than usual interest. In Case 9 two separate precipitin tests were made in each instance with definitely positive results. Nevertheless, operation was delayed because the clinical signs pointed so strongly to cirrhosis of the liver. Later, however, an operation was performed and a hydatid cyst was found on the under surface of the liver compressing the portal vein. Again, in Case 11 a positive reaction was obtained, but at the first operation no lesion was found and the wound was closed up. A second precipitin test gave again a positive reaction, and a second operation was performed when a hydatid cyst behind the liver was found.

1. One cubic centimetre of fluid from Case 6, one week old, interacting with 12 drops of serum from Case 7 before operation gave a slight positive reaction. The serum from this case (7) gave a negative reaction with extract of hydatid membrane (cf. Group III., No. 3) and an indeterminate reaction with the hydatid fluid from the same patient (cf. Group I., No. 4).
2. One cubic centimetre of hydatid fluid from Case 6, one month old, interacting with 10 drops of serum taken before operation from Case 9 gave a decided positive reaction. Operation was delayed (*vide supra*) and the test was repeated with similar results.
3. One cubic centimetre of hydatid fluid from Case 6, two months old, interacted with 13 drops of serum taken before operation from Case 10, but only a very slight precipitate was obtained and the result was indeterminate. A few days later the test was repeated, but the result was still indeterminate.
4. One cubic centimetre of hydatid fluid from Case 6, two months old, interacting with eight drops of serum from Case 11 before operation gave a slight positive reaction. At the first operation no lesion was found, and the test was repeated with again a slight positive reaction. A second operation revealed the presence of a hydatid cyst (*vide supra*).
5. One cubic centimetre of hydatid fluid from Case 6, two months old, interacted with 13 drops of serum taken before operation from Case 12 to give a slight positive reaction.
6. One cubic centimetre of hydatid fluid from Case 6, four months old, interacted with 11 drops of serum taken before operation from Case 14, but the precipitate was too slight to justify a positive diagnosis. At the operation only a shrunken degenerated cyst was found.
7. One cubic centimetre of hydatid fluid from Case 6, four months old, interacting with 14 drops of serum from Case 15 before operation gave an indeterminate result.

Group V.—Our fifth group of precipitin tests includes those conducted with clear hydatid fluid obtained from the liver cyst in Case 15 passed through a Chamberland filter and treated with sodium arsenite, 50 cubic centimetres of the filtrate receiving 0·5 gramme of sodium arsenite. With this fluid three tests were made on hydatid patients before operation, in two instances with positive results and in one instance with a negative result.

1. One cubic centimetre of hydatid fluid from Case 15 + sodium arsenite interacting with eight drops of serum taken before operation from Case 16 gave a slight positive reaction.
2. One cubic centimetre of hydatid fluid from Case 15 + sodium arsenite interacting with 12 drops of serum from Case 17 before operation gave a slight positive reaction.
3. One cubic centimetre of hydatid fluid from Case 15 + sodium arsenite interacted with 14 drops of serum from Case 20 before operation, but no precipitate was seen.

Discussion of results.—While we have obtained further evidence of recognisable and specific interactions between fluids from hydatid cysts and sera from hydatid patients, we have not been able to find a method of applying this reaction so that it will hold good in all cases in conditions of diagnosis. This failure appears to be due to difficulties relating to the serum of hydatid patients and to difficulties relating to the hydatid fluids.

In regard to the serum (antiserum) we must emphasise the great differences that exist between the hydatid antiserum arising in the human subject in conditions of accidental infection and precipitin antisera prepared by artificial injection of animals. In preparing a rabbit, in order to obtain a precipitin antiserum that will interact with blood serum or with egg-white to yield a good precipitate, moderate doses of the protein (from 0·5 to 1·0 gramme of dried protein) are introduced at intervals of two or three days until from 6 to 10 of such doses have been given, and the antiserum is withdrawn 10 or 14 days after the last injection. The precipitable content of such an artificial antiserum will be diminished, or may even disappear, if the injections are inadequate, excessive, irregular, or prolonged, or if the interval between the last injection and the withdrawal of the antiserum is too short or too long. With these somewhat rigid conditions essential to the preparation of a good precipitin antiserum we must contrast the conditions of protein interchange when the human subject becomes invaded by hydatid cysts. In the first place absorption of material

from the hydatid cyst extends usually over a long period of time—certainly for months, often for many years—before the patient comes under observation, and the capacity of the human organism for reaction to the hydatid products may thus become exhausted. Moreover, the absorption of hydatid products may often be inadequate, and more often still it is probably irregular both in amount and in time. On these grounds alone it is only reasonable to expect that the precipitable content of hydatid antisera from the human subject should inevitably be small in the majority of cases, and it is not surprising that in some cases it should be inappreciable.

In regard to the hydatid fluid we must note (*a*) that not all hydatid fluids are equally capable of interacting with hydatid antisera to give a precipitate, and that some appear to fail altogether; (*b*) that when hydatid fluid, filtered or unfiltered, is allowed to stand in a sterile condition a deposit slowly separates out and may form a considerable layer, and that this spontaneous precipitation may be associated with deterioration of the capacity of the fluid for interaction with hydatid antisera; and (*c*) that the low saline content of hydatid fluids may interfere with the precipitin reaction, since precipitin interactions are very susceptible to variations in the saline content of the fluid in which the interaction takes place. There may, however, be some way of overcoming the apparent unsuitability of some hydatid fluids for reaction with hydatid sera, for example, by modification of their saline content, but this last point did not occur to us while carrying out these tests.

Conclusions.—1. A precipitate was not obtained in any interaction between hydatid fluid and human serum from a patient not invaded by hydatid cysts. 2. Having regard to the long duration and probable irregularity of the interchange of protein molecules between a hydatid cyst and its human host, and having regard also to the possible unsuitability of the hydatid fluid, we must expect a certain number of precipitin tests to fail to give a satisfactory precipitate, and this has been our experience. 3. In the conditions of a diagnostic precipitin test as above described for patients suspected to harbour hydatid cysts, a negative reaction is inconclusive, but a positive reaction is conclusive of hydatid invasion, and the latter may be obtained in circumstances of clinical importance.

Sydney.

RECURRENT HÆMATOPORPHYRINURIA WITH TOXIC SYMPTOMS NOT DUE TO SULPHONAL.

BY W. LANGDON BROWN, M.A., M.D. CANTAB., F.R.C.P.,

PHYSICIAN TO THE METROPOLITAN HOSPITAL; MEDICAL REGISTRAR AND DEMONSTRATOR OF PHYSIOLOGY, ST. BARTHOLOMEW'S HOSPITAL;

AND

H. O. WILLIAMS, M.R.C.S. ENG., L.R.C.P. LOND.,

CASUALTY OFFICER AND REGISTRAR TO THE METROPOLITAN HOSPITAL.

HÆMATOPORPHYRIN is present in normal urine, though in such small quantities that it does not alter the colour or exhibit its typical bands on spectroscopic examination. The term "hæmatoporphyrinuria" is reserved for those cases in which enough of this pigment appears to render the urine either of a port-wine colour or of a dark-brown hue, when the spectroscope will at once reveal the cause of the alteration. Such hæmatoporphyrinuria occurs under two sets of conditions: (1) after sulphonal, trional, or tetronal have been administered, when it forms one of a group of toxic symptoms of grave import; and (2) a disturbance of pigment metabolism, continuous over long periods, or recurrent and paroxysmal, for which in some cases diffused morbid conditions of the liver appear to be mainly responsible.[1] In the majority of these instances it does not seem to have had any evil significance. Occasionally, however, cases of hæmatoporphyrinuria occur, which, though not due to any administered drug, present definite toxic symptoms resembling the sulphonal cases in important particulars. Of this the following appears to be an example.

[1] Garrod: Transactions of the Pathological Society of London, 1894, vol. lv., p. 142.

In June, 1906, a married woman, aged 22 years, was admitted to the Metropolitan Hospital, under the care of Mr. W. D. Harmer, for a severe attack of abdominal pain with vomiting and constipation. The vomited material was deeply bile-stained but never fæcal. It was noted that the urine was claret-coloured and that it contained a few blood cells, though not nearly enough to account for the colour. A few granular and epithelial casts were present; there was no bile or pus. No spectroscopic examination of the urine was made. Mr. Harmer decided that the patient was not suffering from intestinal obstruction, so large enemata were given, the patient being placed on milk diet. There was no improvement in her condition until the sixth day after admission, when the vomiting stopped and the bowels became fairly regular. The urine was still claret-coloured when she was discharged. Soon after this she miscarried. The urine subsequently became normal in colour and she enjoyed her usual health until April, 1907, when she had another attack of abdominal pain, vomiting, and constipation, for which she was treated at an infirmary. During this attack the patient noticed that her urine again became dark. She was quite well within a week and the urine soon regained its natural colour. On Feb. 28th, 1908, she had her third attack of abdominal pain, vomiting, and constipation, for which she was admitted to the Metropolitan Hospital, under the care of Mr. Peter L. Daniel, who, deciding that there was no evidence of intestinal obstruction, transferred her to the medical wards, where she came under our observation. She was very thin, of a dark complexion, with a good deal of pigmentation on the face and abdomen. The tongue was coated with a thick brownish fur. The teeth were good. Nothing abnormal could be discovered in the chest and the reflexes were natural. The abdomen moved well; there was no rigidity, no tenderness on palpation, and no evidence of free fluid. The liver dulness was normal and the spleen was not palpable. The pain complained of was referred to the umbilicus. A small amount of blood was found to be oozing from the anus, but nothing abnormal could be felt on rectal or vaginal examination. The temperature was 98° F., the respirations were 30, and the pulse was 90. The blood pressure was 110 and the administration of two drachms of adrenalin chloride solution by the mouth did not raise it. The patient passed only small quantities of urine which was dark brown in colour and strongly acid. It contained no blood corpuscles, albumin, sugar, acetone, or diacetic acid. On spectroscopic examination two bands were seen, identical in position with those of oxyhæmoglobin, which were unaltered in position on the addition of reducing agents or glacial acetic acid. Dr. A. E. Garrod reminded one of us in conversation that hæmatoporphyrin was often in combination with metals when present in the urine, in which condition it shows these two bands instead of those of acid or alkaline hæmatoporphyrin. The urine was accordingly treated with strong hydrochloric acid, when it became purple in colour and now showed the two bands typical of acid hæmatoporphyrin, their centres being approximately λ 605 and λ 565. Both before and after treatment with acid the band of urobilin just beyond the F line in the blue was very distinct. A specimen of the urine was sent to Dr. Garrod, who very kindly confirmed the presence of hæmatoporphyrin and urobilin in it. The patient was still vomiting and had become very drowsy and delirious. She had three epileptiform fits lasting for about five minutes each. The temperature was slightly raised. Small doses of calomel were given, but the bowels only acted in response to enemata for the first five days. The combination of toxic symptoms with hæmatoporphyrinuria naturally led to the suspicion of sulphonal poisoning, so large doses of alkali in the form of sodium bicarbonate were given, as advocated by Franz Müller[2] and by Stockvis. On account of the scanty urine and the low blood pressure potassium citrate and tincture of digitalis were added. An examination of the blood by Mr. E. H. Shaw, pathologist to the hospital, showed 5,920,000 red corpuscles, 100 per cent. of hæmoglobin, and 9000 leucocytes. The differential count showed a curious alteration in the proportions, 36 per cent. being polymorphonuclear, 50 per cent. small lymphocytes, 12 per cent. large mononuclear, 3 per cent. eosinophiles, and 1 per cent. basophiles. On the next day she was much better and quite

[2] Wiener Klinische Wochenschrift, 1894, S. 252.

clear mentally, though much prostrated. Recovery was rapid, but the urine continued to be brown, though not so dark in colour, and it still showed well-marked bands of hæmatoporphyrin. Constipation was the chief trouble and enemata had to be resorted to frequently. The patient left the hospital apparently quite well on March 26th. She continued to take a mild laxative and periodically presented herself for examination. Week by week the urine became lighter in colour, though the bands could still be detected until the beginning of June, when they entirely disappeared after the administration of a drachm of magnesium sulphate three times a day for one week.

It will be noticed that the symptoms here described closely accord with those seen in the hæmatoporphyrinuria of sulphonal poisoning in which, Garrod and Hopkins[3] state, "vomiting, constipation (sometimes following an initial diarrhœa), and abdominal pain are the most constant symptoms. In a few cases febrile disturbance has been observed, but as a rule there is no rise of temperature." The patient denied, however, that she ever took any drugs except those given her by her medical attendant, who kindly informed us that he had never ordered her any sulphonal or trional. That these drugs were not responsible for her symptoms is further supported by the fact that she remained in hospital for a month, during which time no such drugs were given, and yet the hæmatoporphyrinuria persisted. It should be added that while in the surgical ward she was given a drachm of paraldehyde and eight grains of veronal, but the dark colour of the urine was noted before this, and we are not aware that these drugs have ever been found to produce hæmatoporphyrinuria.

Garrod has reviewed those cases of hæmatoporphyrinuria not due to sulphonal which had been recorded up to 1904. In that series there are only two which presented toxic symptoms similar to those here described. Ranking and Pardington[4] described this symptom in two women, aged 41 and 47 years respectively. The patients were both highly neurotic and subject to chronic gastric catarrh and menstrual disturbances. They were seized with vomiting, thirst, suprapubic pain, and profound prostration, but there were no signs of organic disease. They were in bed in different rooms of the same house, but were not related. One recovered, the other died. No sulphonal was given, and Ranking was convinced that in the fatal case, at any rate, none had been taken. A dose of acetanilide had been followed by some unpleasant symptoms which passed off, and in the second case acetanilide had not been given. We have found two other instances recorded since the publication of Garrod's paper.

Lestock Thornton[5] records the case of a man, aged 45 years, who was seized with griping pains in the abdomen, nausea, and slight diarrhœa. Then he passed some blood-stained mucus and some bright blood per rectum. There was tenderness over the ascending and transverse colon, but nothing could be felt on rectal examination. The urine was port-wine coloured but showed no blood to the guaiacum test. No grave symptoms were present at any time and the patient made a good recovery. Thornton considered that the symptoms could be most easily explained by a hæmorrhage high up in the colon. The difficulties in the way of this view will be discussed presently.

T. K. Munro[6] has reported three cases of hæmatoporphyrinuria not due to sulphonal, one of which appears to belong to the category now under consideration. A boy, aged seven years, had been subject to cyclical vomiting with acetonuria for two years. In the attack described he was very ill and could retain nothing. The vomit was coloured like coffee and he passed blood by the bowel. This attack lasted much longer than the former ones, though there were periods of several days in which vomiting did not occur. After it had lasted for about six weeks the urine for the first time was red in colour and was found to contain hæmatoporphyrin. This abnormal pigmentation of the urine continued until the boy died about a week later. By this time he was greatly emaciated. He had been free from vomiting for about six days before the end, but towards the close he threw up some blood on one or two occasions. At no time were drugs of the nature of sulphonal or trional administered.

The bleeding per rectum which occurred in Thornton's case, in Munro's case, and in our case, is of interest in view of Stockvis's suggestion that hæmatoporphyrinuria due to sulphonal is the result of hæmorrhage into the intestinal canal or its walls. Calvert[7] has recorded a case of hæmatoporphyrinuria in a woman, aged 32 years, after copious hæmatemesis from gastric ulcer, in which the patient made a good recovery. This might be held to support Stockvis's contention, though the patient stated that she had passed similar urine about a year previously when suffering from dyspepsia, but had no hæmatemesis or melæna. Patients often fail to notice the occurrence of melæna, however, and a stronger argument against Stockvis's view is provided by the fact that such hæmorrhages have usually been absent in sulphonal cases examined post mortem, while in other cases of hæmatemesis Garrod failed to find any noteworthy increase of urinary hæmatoporphyrin. The frequent association of hæmorrhage into some internal organ with hæmatoporphyrinuria, not due to sulphonal, is a noteworthy fact, whatever the explanation may be.

Recent additions to our knowledge of toxic alterations in the hæmoglobin molecule would suggest that the type of case here described is due to some intestinal intoxication. We advance this hypothesis with the more diffidence, since there is to-day a tendency to explain diseases, of which the pathology is unknown, in this way on inadequate grounds. The existence of intestinal intoxication is easy to assert, but difficult to prove.[8] The facts which seem to us to point to an intestinal intoxication are these: 1. The leading symptoms were those of an intense gastro-intestinal irritation, abdominal pain, vomiting, with the passage of blood per rectum, followed by much prostration, restlessness, and delirium. Similar symptoms were present in Ranking and Pardington's cases, in Munro's first case, and to a milder degree in Thornton's case also. The similarity of the symptoms with those of sulphonal poisoning suggest a toxic agent. 2. Hæmatoporphyrinuria has occurred in enteric fever (Soberheim[9]), and McCall Anderson[10] has met with it in recurrent hydroa æstivalis in two brothers. 3. The pronounced urobilin band shows that one body of putrefactive origin, at any rate, was being absorbed in excessive amount by the intestinal walls. 4. Sulphæmoglobinæmia occurs under conditions of constipation and is much relieved by systematic treatment with aperients. Van der Bergh, West and Wood Clarke,[11] Hurtley and Wood Clarke,[12] have shown that in the formation of sulphæmoglobin the blood pigment is first reduced and then combines with the sulphur. Now Laidlaw[13] found that hæmoglobin would break down into hæmatoporphyrin much more readily in the reduced state than when containing oxygen. This suggests that in both cases some reducing agent is at work, and the intestinal symptoms point to the alimentary canal as its source. Magnesium sulphate relieved West's case of sulphæmoglobinæmia and our case of hæmatoporphyrinuria. On this view we have in methæmoglobinæmia an interesting analogy with hæmatoporphyrinuria. The former has been proved to result either from drugs of the aniline class or from intestinal intoxication; the latter can be produced by sulphur-containing derivatives of the aldehydes and apparently by intestinal intoxication also.

In conclusion, it must be admitted that hæmatoporphyrin alone does not account altogether for the altered colour of the urine, as was pointed out by Hammersten. Garrod found that he could remove the hæmatoporphyrin so completely from the urine in one of his cases that its spectrum was no longer seen, without appreciably affecting the colour of the urine, while if he added this pigment to normal urine until its absorption bands were visible with as great intensity as in the darkest specimens, only a comparatively insignificant change of tint was produced. In the present case excess of alcohol precipitated a considerable quantity of the abnormal pigment. Alcohol acidified with acetic acid took up the hæmotoporphyrin from this, but left a brown pigment

[3] Journal of Pathology and Bacteriology, 1896, p. 434.
[4] THE LANCET, Sept. 20th, 1890, p. 607.
[5] THE LANCET, Sept. 24th, 1904, p. 888.
[6] Quarterly Journal of Medicine, vol. i., p. 49.
[7] Transactions of the Clinical Society of London, 1901, vol. xxxiv., p. 41.
[8] Langdon Brown: Medical Press and Circular, July 22nd, 1908, p. 82.
[9] Quoted by Munro in Quarterly Journal of Medicine, vol. i.
[10] British Journal of Dermatology, 1898, vol. x., p. 1.
[11] THE LANCET, Feb. 2nd, 1907, p. 272.
[12] Journal of Physiology, vol. xxxvi., p. 62.
[13] Ibid., vol. xxxi., p. 464.

behind. The nature of this residue is at present unknown. Garrod and Hopkins think that in some instances much of it is a derivative of hæmatoporphyrin, but that even this cannot be asserted of all the cases. The large number of red corpuscles present in the case here described would seem to negative any excessive hæmolysis. This is in agreement with Garrod's conclusion that a perversion, rather than an increase of hæmoglobin katabolism is responsible.

NOTE ON A CASE OF INTUSSUSCEPTION OF THE SIGMOID FLEXURE OF THE COLON.

BY ALEXANDER DON, M.A., M.B., C.M. ABERD., F.R.C.S. EDIN.,

SURGEON TO, AND LECTURER ON CLINICAL SURGERY IN, THE ROYAL INFIRMARY, DUNDEE.

INTUSSUSCEPTION of the colon, simulating a simple prolapse of the rectum, is, judging from the small number of cases recorded in recent literature, a comparatively rare accident. In fact, intussusception in the adult is not often met with, and is usually caused by a polypus situated low down in the pelvic colon. The following case affords some points of interest that make it worth recording.

The patient, a female multipara, 44 years of age, was in her usual health up to August 31st, 1908, when, feeling out of sorts, she took a dose of Epsom salts and cream of tartar. Later, when at stool, she felt a "wrench" inside and something came out at her anus. A good deal of blood and mucus was passed. She was admitted to my ward on Sept. 1st, as a case of prolapse of the rectum, and was suffering a good deal from pain over the lower abdomen. A sausage-shaped tumour, from 8 to 10 inches in length, protruded from the anus. It was red and swollen and at the apex was a sloughing polypoid mass. The patent lumen was discharging mucus. She was vomiting a brownish fluid, not stercoraceous, and her pulse was good, its rate being 60 per minute. Two hours later she was given chloroform with the object of reducing the prolapse per anum. On examination the finger could be passed into the rectum between the tumour and the sphincter without obstruction from the cul-de-sac. The polypus had a fairly broad base and was sloughing at its posterior segment. A circular ligature was applied and the mass was cut away flush with the mucosa. An attempt was then made to reduce the bowel with one hand in the rectum and the other steadying the tumour extra-abdominally, but only about six inches of the intussusception could be thus returned. The apex was fixed and it was feared that further manipulation might cause rupture; and, as there was doubt both as to the nature of the polypus and the vitality of the mesenteric sector laparotomy was performed. The abdominal wall was unusually filthy, as the patient was suffering from what proved to be a pustular scabies all over the body, and especially marked by scratches and small ulcers over the lower abdomen. The skin was cleaned as usual with a depilatory containing oxide of lime and sulphide of soda, and the edge of the wound was sutured to sterile lint as soon as the median incision was made, thus shutting off the septic surroundings as far as possible. The tumour was easily located and brought out. It consisted of colon entirely, and its distance from the anus was about 20 inches. The intussusception was easily reduced, but its site, with about three inches of healthy bowel on either side, was fixed outside the abdominal wall. Dr. A. Leitch examined the polypus microscopically and reported it to be a simple villous papilloma.

An opening in the bowel was made next day without any anæsthetic. The mesenteric segment from which the tumour arose was necrotic, and the whole mass was removed, the lower opening being closed by circular ligature and the mesentery tied *en masse*. This caused considerable pain. The artificial anus acted well, and the patient quickly regained her normal strength. An attempt was made to get the skin cleaned prior to closing the colostomy, as, owing to the urgency of her condition on admission, little could be done then. The real nature of the skin rash was not suspected, and ordinary measures did not improve the condition to any extent, especially round the wound. The left hypogastric region was the least septic, as well as nearest the descending colon, and I decided to enter the abdomen there. Owing to the great length of the sigmoid and mesosigmoid, I anticipated little difficulty in doing a lateral anastomosis and excising the colostomy ends after evaginating them through the colostomy opening. As such an operation was likely to take some time, the patient was given a hypodermic injection of a quarter of a grain of morphia and 1-100th grain of scopolamine on the night before the operation, and a similar dose on the next morning. The operation lasted nearly two hours, yet less than one ounce of chloroform was used and the patient slept on for five hours after the operation. There was no shock, the pulse being quite slow, though occasionally missing a beat towards the end of the operation.

On opening the abdomen the two ends of bowel were sought for, when it was found that the lower end was fairly tense, being held up by a twist round the upper end. The upper end was pulled out, crushed by the enterotribe as near the colostomy opening as possible, ligatured, and both ends invaginated by purse-string sutures. These were reinforced by a continuous Lembert. The mesocolon of the colostomy end was next ligatured piecemeal, each part being divided between the ligature and the bowel immediately the ligature was tied. There was practically no hæmorrhage. The rectal end was then brought out and treated in a similar fashion. The two ends of the bowel were now laid side by side and a lateral anastomosis was made, leaving an opening of about 1½ inches. There was some difficulty in doing this outside the abdomen owing to the amount of sigmoid, about 12 inches, which had already been resected. The ligatures on the mesocolon were tied together in a mass and a few stitches added to close the rent in the mesocolon. An attempt was then made to evaginate the two loops of bowel connected with the colostomy opening from the inside through their central openings. This was the most difficult part of the operation and in both cases the finger was pushed through the side of the bowel where section of the mesocolon had left it uncovered by peritoneum, but as this happened after nearly complete evagination, and as there were no fæces in the parts, no harm resulted, though it is hardly possible that no organisms reached the peritoneum during the withdrawal of the finger. The lateral incision was closed by layer sutures of silk. The two ends of the bowel protruding through the mesial openings were ligatured with strong catgut and cut away flush. A sterile dressing was applied to both wounds.

On the next morning the temperature rose to 102° F. and the pulse-rate to 112. On the second day after the operation the central wound was smelling badly and the projecting bowel was black and necrosed. The temperature was then 100°. A sterile gauze dressing was reapplied after sprinkling the sloughs with iodoform. During the next few days the patient's condition was rather poor and she complained of pain in the left side, and on the ninth day after the operation the side wound was seen to be bulging and was opened, when a quantity of pus and a gauze swab escaped. Recovery after this, so far as the abdomen was concerned, was uneventful, but later the patient developed a high temperature due to a septic ulcer of the tonsil, with some arthritic effusion, from which she soon recovered. The tonsillar ulcer yielded to specific treatment.

Looking back over the case, the following reflections are suggested:—1. Would it not have been better to have simply anchored the doubtfully necrosed area at the first operation with gauze tampons till its vitality or otherwise could have been ascertained, or to have excised it at once? 2. Would not the ordinary method of closing the colostomy wound by excision of the opening and lateral anastomosis through the same opening, even with its septic surroundings, have been safer? A gauze drain could have been left in as a safeguard. 3. Would this method of evagination have been more satisfactory if the mesentery had been doubly tied before division and the bowel pulled out by a pair of long forceps instead of evaginated with the finger from the inside? This could have been done more easily if the external openings had first been stretched a little and the apex of the loop then seized by an assistant with forceps, the operator guiding the forceps internally.

Maunsell's method of dealing with intussusception did not seem well adapted to this case owing to the high origin of the trouble, and the union at the mesenteric border is always

a weak spot. Bishop records a case where he first did a colostomy, but the advantage of such a preliminary step in preference to treating the whole condition through a cœliotomy wound is not very apparent.[1] Oderfeld's operation,[2] with immediate resection, is the best yet suggested when the conditions of the patient and of the bowel are satisfactory, but as in simple resection any paralysis of the bowels would tend to a rupture at the suture line, the intussusceptum should always be removed per anum at the time of the operation, and the lower bowel irrigated with warm sterile salt solution.

The usual method of closing a colostomy wound by excision is not very satisfactory, inasmuch as the surrounding skin cannot be rendered sterile and a general peritonitis cannot with certainty be avoided. With thin and lax abdominal walls the method here adopted is not difficult, and the colostomy wound could be excised after the pieces of bowel have been evaginated if preferred. This would open up the peritoneal cavity, but there would be no manipulation of its contents through the opening. The external ligature round the bowel approximates serous to serous coats, and could be done with more safety if the peritoneum were fixed to the skin at the first operation. A second closing might be necessary to prevent hernia, but the whole aim of the surgeon should be the safety of the patient and not the brilliancy of the operation.

Dundee.

A CASE OF DISEASE OF THE HIP-JOINT DUE TO STREPTOCOCCAL INVASION, WITH SECONDARY MANIFESTATIONS IN OTHER PARTS.

BY W. OLIVER BEDDARD, L.R.C.P. LOND., M.R.C.S. ENG.

THE following notes on a case of disease of the hip-joint, proved to be due to streptococcal invasion, may seem worth recording as showing the resemblance which it bore in early stages to tuberculous disease and the rapidity with which destruction of bone took place, practically without pain or more than slight disturbance of temperature, and also adduce some evidence as to the value of treatment by a vaccine prepared from the patient's bacteria.

The patient, aged 12 years, a healthy-looking, well-nourished boy, was first seen on Sept. 14th, 1907. He then complained of pain on the outer side of the right thigh. He could move about the room with the aid of a stick, holding the right leg flexed at the hip and knee so that the toes only touched the ground. Pain was felt in the thigh only; none in the hip or knee. On examination there was found to be no tenderness of muscle in the area of pain and no tenderness of the femur. The hip-joint was held fixed and any attempt to move the joint or to extend the knee caused the occurrence of pain in the thigh; no fulness or fluctuation in connexion with the hip could be detected; there was lordosis of the spine. Eight days previously the patient had complained of pain in the thigh which had caused him to be somewhat lame for three days, when it disappeared entirely, so that he could run about and play lawn-tennis. On Sept. 13th he had again become a little lame and was kept awake that night by pain in his thigh. There was no history of illness; he was in particularly good health, having recently returned from a holiday at the seaside. There was no definite history of injury beyond that ten days previously he had been on a water-shute. On the first trip he sat in front and when he got off he said his back hurt him; however, he made other trips, taking a back seat so as not to feel the bump so much; he also made some trips on a switch-back railway. He seemed quite well on arrival home and made no further reference to pain.

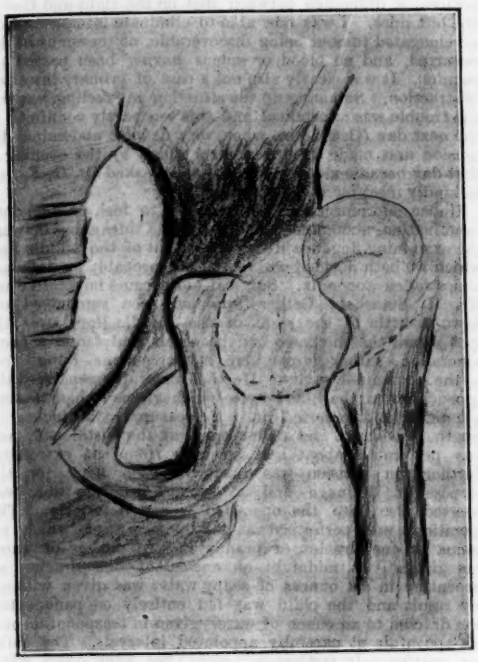
As a result of extension the limb became quite straight and pain subsided in a few days. Deep pressure over the hip-joint elicited some signs of pain. On Oct. 5th a skiagraph was taken by Dr. A. H. Greg. This revealed nothing abnormal in the hip-joint. From Sept. 14th to Nov. 26th (the ninth to eighty-second days of illness) the patient, treated with rest and extension, was practically free from symptoms except for occasional attacks of sickness lasting one or two days. There was at the latter date no real or apparent difference in the length of the legs. The temperature was only slightly above normal. On Nov. 26th (the eighty-second day of illness) a soft semi-fluctuating swelling appeared in the right groin; there was great tenderness over and around the swelling and over the great trochanter. The temperature at night was 103° F. This swelling rather quickly subsided and had disappeared by Dec. 3rd. On the 11th (the ninety-seventh day of illness) the patient complained of pain in the left side, particularly after coughing, and that he had been kept awake by throbbing pain. Examination revealed a tender swelling which gave a doughy sensation to the touch, its centre was a little to the inner side of the middle of Poupart's ligament, it encroached two or three inches over the abdomen, obliterating resonance, also over the upper part of Scarpa's triangle. There was no tenderness on the posterior aspect of the hip. The swelling appeared to be confined to the tissues over the joint, the joint itself not being involved. The boy looked ill and flushed. The morning temperature was 99°, that of the evening being 102°. This swelling gradually subsided, leaving the inguinal glands hard and tender. On the 16th (the one hundred and second day of illness) there was a similar tender swelling at the upper part of the inner side of the thigh on the same side, which gradually extended downwards along the inner side of the thigh from the apex of Scarpa's triangle to the popliteal space and eventually as far as the middle of the back of the calf. As the swelling passed down the leg it cleared up above. After all swelling had disappeared hard tender glands could be felt in the popliteal space and in the back of the calf. Whilst this train of symptoms was in progress the temperature was fairly consistently in the morning 100° and in the evening 101°; at its conclusion it fell practically to normal. On Jan. 4th, 1908 (the one hundred and twenty-first day of illness), a blood examination was made by Dr. E. E. Klein with cultures on surface agar plate, surface agar tube, and broth tube. The result showed the blood to be quite sterile, no microbe of any sort having developed in these cultures after 48 hours at 37° C. In the meanwhile the right hip treated with rest and extension had given rise to little trouble. There was some enlargement of the great trochanter, which was a little tender on pressure; there was also some tenderness over the posterior aspect of the joint. On Feb. 6th (the one hundred and fifty-fourth day of illness) the patient complained of painful twitchings in the right thigh, the pain being chiefly felt on the outer side of the thigh (the original site of pain); there was also some pain in the knee. On examination there was found to be a more general enlargement of the trochanter, which was also more tender; pressure upon it elicited spasms in the muscles of the thigh. These starting pains were not severe; they occurred only during the daytime at intervals of two or three hours and ceased entirely after a few days. On the 16th (the one hundred and sixty-fourth day of illness) there were obvious differences in the bony relations of the two hips and the right leg showed nearly one inch of shortening. Dr. Greg took another skiagraph, concerning which he made the following report:—

> The femur is displaced upwards, the upper lip of the acetabulum is absent. The whole surface of the acetabulum is rough. The femur is intact but very much rarefied, not, however, with the rarefaction typical of caries. The dislocation is accompanied by extreme external rotation. The points unlike ordinary tuberculous disease are the dislocation without any destruction of head of femur (this I have not seen in tubercle) and the rarefaction not being typical. The destruction of the acetabulum has been very rapid. The x ray examination strongly supports the view that the disease is not tuberculous.

On Feb. 23rd (the one hundred and seventieth day of illness) an operation for excision of the hip was performed by Mr. E. M. Corner, the anæsthetic being administered by Dr. Z. Mennell. An anterior incision was made over the joint, upon opening which a little clear fluid escaped. The head of the femur having been cleared with an elevator and the neck sawn through the head of the bone was extracted. The bone removed was exceedingly light and friable; portions of it were immediately placed in a sterilised bottle for examination by Dr. Klein. Exploration of the acetabulum showed it to be extensively destroyed. A false acetabulum had been formed above the real one. The old acetabulum was removed entire—it consisted merely of a shell of friable bone; the

[1] Brit. Med. Jour., Dec. 22nd, 1900.
[2] Centralblatt für Chirurgie, No. 10, 1899.

new one was also easily removed almost entire; above and around these acetabula there was much destruction of bone. Only remnants of ligamentous structures remained. No pus was encountered during the operation. The cavity was thoroughly curetted, much diseased tissue being removed. The wound was completely closed with Michell's sutures and t healed by first intention.



Outline drawing of the deformity. (From a skiagram.)

On March 6th (the one hundred and eighty-third day of illness) the patient's right knee was found to be swollen. Examination showed the knee to be tender to touch; downward pressure upon the patella so as to bring its posterior surface in contact with the condyle of the femur caused much pain; there was no pain except when the knee was touched. There was a considerable amount of fluid in the joint. The synovial membrane appeared distinctly thickened so that the condition of the joint seemed to be the result of an inflammatory process, and not due merely to accidental breaking down of adhesions, formed during the long period of inactivity, by the manipulations necessary during the operation. The synovitis showed no inclination to clear up, but rather tended to increase. The knee gave a doughy sensation to the touch. Dr. Klein reported as follows:—

I received on Feb. 24th a sterile bottle containing pieces of bone and bone scrapings. Film specimens stained showed numerous minute cocci, chiefly as diplococci, but also some isolated and in small clusters. Cultures were made at the same time on the surface of nutrose ascitic agar (nasgar) set previously in a plate dish; this plate culture was incubated at 37° C. Twenty-four hours after—i.e., Feb. 25th—the plate exhibited numerous round translucent minute colonies, very slightly raised, and of a more or less homogeneous texture. On staining, these colonies appeared composed of minute cocci—Gram-positive. Subcultures were made on nasgar and ordinary agar, with the result that planted on the surface of these media a translucent, very thin, filiary growth was produced which examined in cover films showed the same Gram-positive cocci—either in clusters or isolated, or as diplococci, but the condensation fluid contained small flocculi which under the microscope exhibited distinct streptococci: some of these were short, composed of four cocci; others were longer, up to 32 constituent cocci. On the average 8–10 cocci constituted the chains. In ordinary nutrient broth the microbe grows slowly at 37° C., forming in several days only very faint turbidity. On nutrient gelatin kept at 20° C. the microbe grows fairly well, forming round translucent colonies, which in two days caused distinct liquefaction. When liquefaction has well progressed—i.e., after about a week—the liquefied material is clear with a granular sediment of growth. In this sediment streptococci can be recognised. From this account it appears, therefore, that we were dealing with a Gram-positive coccus, which, although on the solid media forms a growth of staphylococcus, in the fluid parts exhibits the characters of streptococcus. This coccus in culture does not enable us to identify it with the known pathogenic species either of staphylococci or streptococci. I have injected a whole agar culture subcutaneously into a rabbit but no result was thereby produced either locally or generally. The vaccine was prepared thus: from an agar surface culture (sloped ordinary agar) one loop—2 milligrammes—was distributed in 8 cubic centimetres of sterile saline solution. This emulsion was kept at 60° C. for half an hour. Doses of 1 cubic centimetre were filled into eight phials; the phials were then sealed and heated again for 30 minutes at 60° C.

From the Louis Jenner Clinical Laboratory, to which Mr. Corner sent portions of bone, the reply, as the result of an examination of the microscopic sections, was that they presented "no evidence of tuberculosis." Throughout this long illness, though the patient's general condition varied, he was steadily losing ground, so that at the time of operation he was in a very wasted condition. The face was generally flushed, the appetite was very poor, and any attempt to increase the amount of food resulted in troublesome sickness. A curious symptom which persisted through the illness was desquamation of the skin; this occurred constantly all over the body but was most marked on the right leg; so much was this the case that the sheet upon which the patient lay was covered with epithelial scales. The right foot peeled several times to such an extent as to leave raw tender places on the toes. Associated with this desquamative process was a marked tendency to the formation of sores. These sores would result from the pressure of the softly-padded leather used in connexion with the extension apparatus. The sores were shallow with shelving sides, healing slowly under thick scab; they proved a difficulty in carrying out treatment by extension. The first injection of vaccine was given on March 1st; they were continued for eight injections at intervals of four days. The progress of the case from this time onward was entirely satisfactory. The boy's condition wonderfully improved, he rapidly regained the loss of flesh, the sickness ceased, the sores healed, and the desquamation disappeared.

At the present time (one year after operation) the patient is able to walk with the aid of a walking stick; there is shortening of the right leg to the extent of about one inch; the right knee is somewhat enlarged, its range of movement has steadily increased so that it can now be almost completely flexed.

On reviewing the case one cannot but feel a regret that the nature of the micro-organism was not discovered earlier and a vaccine prepared therefrom used, but there were obvious difficulties in the absence of signs of fluid or pus in the hip-joint and the negative evidence of the early x rays and blood examination. Bearing in mind the threatening aspect of the knee-joint and its almost certain identity with the disease in the hip, it seems reasonable to believe that the course of this destructive disease might have been cut short by the early use of a vaccine. The difficulty which presents itself is, how could a portion of the bacterial tissue have been obtained in the early stage of the disease without exposing the patient to grave risk, when there appeared to be no symptom which indicated the unlikelihood of recovery under expectant treatment?

It would seem possible, had the blood examination been made during the time of the acute manifestations in the left leg, pointing to systemic invasion, or a culture have been made from lymph, withdrawn by a syringe, from swelling, that the microbe might have been then found.

It is instructive to notice that the x rays proved of no practical value in the early stages, as was also the case in another patient, shown at the Hospital for Sick Children, Great Ormond-street,[1] who presented an almost precisely similar clinical picture, but later they demonstrated the condition very clearly and accurately. The resemblance which such a case bears to tuberculous disease makes the diagnosis a matter of great importance and of considerable difficulty. As to the mode of infection in this particular case there is no evidence; there were no symptoms of even trivial illness preceding its onset.

Twickenham.

[1] Medical Press and Circular, April 1st, 1908, pp. 368–376.

AMERICAN PROCTOLOGIC SOCIETY.—The eleventh annual meeting of this society will take place at Atlantic City, New Jersey, on June 7th and 8th. An interesting programme has been set down for discussion. The President of the Congress is Dr. George B. Evans of Dayton, Ohio, and the secretary is Dr. Lewis H. Adler, jun., of Philadelphia.

AN INTERESTING CASE OF APPENDICITIS: PERFORATION; OPERATION; RECOVERY.

BY T. WILSON PARRY, M.A., M.D., B.C. CANTAB.

THIS case of appendicitis is interesting because the patient was only 16 months old, while the condition was otherwise unusual. Moreover, the patient when an infant five months old suffered from fistula in ano, and it is not often that a medical man is called upon to attend a patient for two rare surgical affections in the first six months of life.

The patient was a boy, who was born on June 10th, 1907. He was a posthumous child, his father dying at the age of 33 years, after a short three days' illness, three weeks before the child was born, of what was called an acute asthmatical attack. I did not attend him, but am informed that he had had a bad attack of influenza in the preceding December, from which he never properly picked up, losing flesh steadily, till this acute attack intervened, from which he did not recover. There appears to have been a history of tuberculosis. When the child was a month old the mother noticed when bathing him a thickening of about the size of a small pea situated deeply in the right ischio-rectal fossa. The child had no pain and I left instructions that it should be carefully watched by the mother and if it grew larger or altered in any way I was to be immediately informed. When the child was four months old the little place had slowly become larger, so that I was able to detect fluctuation. On Oct. 7th I cut down under an anæsthetic, evacuated a few drops of pus, thoroughly scraped the part, and expected it to heal up forthwith. It did not heal and a second "pointing" occurred, not far from the original one, but not communicating with it, which I also opened. There were now two separate sinuses for a few days till the last one that was opened suddenly closed up. Although I could not discover any opening into the rectum I naturally began to consider it to be a case of fistula in ano. Mr. G. B. Mower White, who kindly met me in consultation, confirmed my diagnosis and told me that it was the first case of fistula in ano he had seen in an infant. I passed a probe in the usual manner through the wound into the rectum, cut down upon it, scraped thoroughly and dressed in the accustomed way for fistula, and the case healed soundly in one month's time.

That fistula in ano is an exceedingly rare affection in children under two years of age there can be no question. I have been unable to find a case recorded. I have been unable to discover whether the fistula in this instance was, or was not, of tuberculous origin.

I was called again to attend the same little patient on Oct. 9th, 1908. The mother told me he had had a restless night, whimpering and tossing incessantly. His fingers had been constantly in his mouth and he appeared to be cutting one of his four remaining still uncut molars. Two months previously to this he had had a teething attack accompanied by an obstinate paresis of the bowel which had lasted five weeks, and which aperients and enemata had the greatest difficulty in overcoming. Since that time, however, the child had been in excellent health. His mother told me that his bowels had been properly opened on the preceding day, but she had given him a dose of castor oil that morning before I came. On examination the temperature was slightly subnormal, there was no sickness, and the abdomen (usually large) was neither distended nor at all rigid. In the evening the temperature rose to 102° F., but there was still no sickness or abdominal rigidity. As the bowels had not been opened I gave an enema of plain warm water and the result was good. On the next morning (Oct. 10th) the temperature was again subnormal and I may here say, as it became a point of special interest in the case, that with one exception, and that when it rose only four points, the temperature remained subnormal during the whole of the rest of the attack both before and after operation. In the evening, as the bowels had not acted, I gave another enema, but this time only with slight success, what was passed being extremely offensive. There was still no sickness, but a slight abdominal rigidity had appeared which was more marked over the right abdomen. During the next two days (Oct. 11th and 12th) sickness intervened and there was undoubted pain in the abdomen, which, however, was much relieved by frequently applied hot fomentations. The pulse was good. In the evening of Oct. 12th when I called I found the child asleep and I was enabled to partly examine the right iliac fossa without waking the child up, only eliciting a single cry when my finger touched the bottom of the fossa. I could feel no lump and the abdominal rigidity appeared to be less, though there still existed a noticeable difference between that on the right and that on the left sides. I was now able to eliminate intussusception, no elongated tumour being discoverable, no tenesmus having occurred, and no blood or mucus having been passed per rectum. It was clearly also not a case of primary intestinal obstruction. Summing up the situation my feeling was that the trouble was appendical and this was partly confirmed on the next day (Oct. 13th), when very definite abdominal distension first made its appearance, which by the evening of that day became much increased, and I asked Dr. G. F. Still to kindly meet me in consultation.

Under chloroform we were both able to feel, on bimanual examination, abdominally and rectally, a thickening between the examining fingers a little to the right of the middle line, which we both decided was more than probably an inflamed and swollen appendix. Surgical aid became imperative and Mr. H. Stansfield Collier who had been summoned cut down a little to the right of the middle line, over the spot where the thickness had been felt, and found a fæcal concretion, rather larger than a cherry-stone, lying loose in the abdominal cavity. He then carefully separated the appendix from the bladder, to which viscus it had become adherent, and removed it. It measured two inches in length, was large and club-shaped at the distal end, and was perforated about half an inch from the extremity. Further, an incision was made in each flank for the purpose of drainage and a rubber drainage-tube was inserted also into the operation wound anteriorly. The operation was performed at 9.30 P.M., after which an enema of one drachm of brandy in two ounces of water was given. At midnight an enema of one drachm of turpentine in six ounces of soapy water was given without any result and the child was fed entirely on panopepton (one drachm to an ounce of water) given in teaspoonfuls and half-spoonfuls at carefully appointed intervals. The child was continuously restless all night, but kept down what food was taken till 12.40 P.M. on the next day (Oct. 14th), when vomiting again returned. This occurred at three other times during the day. At 2 P.M. the tube in the operation wound was removed and a six-ounce enema of turpentine and soapy water was given per rectum when some flatus was passed. At 4 P.M. a quarter of a grain of calomel was given and at 9.30 P.M. another injection of turpentine and soapy water was administered, but with no result. On Oct. 15th the child vomited eight times. At 9 A.M. I gave three enemata consecutively, each consisting of a drachm of turpentine, a drachm of ether-soap, and six ounces of water, but there was still no action of the bowels. In spite of this last-mentioned fact abdominal distension was markedly less, so much so indeed that a drainage-tube in the right flank became bent at an angle, the skin moving downwards fully three-quarters of an inch. As the tube was now rendered useless by virtue of the kink produced I removed it. I now put the child on one-eighth of a grain of calomel every two hours to endeavour to create a peristalsis, and these powders were continued until a full grain of the salt was given. The result was excellent. After the second powder had been given the vomiting ceased, and when at 6 P.M. I again repeated my three consecutive enemata of the morning a fairly good motion with much flatus was passed. At 1.30 A.M. on the 16th the child was very restless and in much pain, but the passing of a rectal tube liberated a large quantity of flatus and gave immediate relief. An enema was again given at 4.30 A.M., but without success; but at 6 A.M. a small motion was passed naturally. At 4.30 P.M. another enema was given and this time a good result was obtained. I now took the child off panopepton and put him entirely on two drachms of Theinhardt's food with one and a half ounces of milk in six ounces of water. Flatus was now passed frequently. On the 17th the milk was increased by half an ounce in each feed of six ounces. The bowels acted twice slightly and once well. On the 18th I removed the third tube. The discharge from the wounds was now not nearly so offensive. The wounds were dressed twice a day

and the discharge, when thick, scanty, and offensive, was thinned and increased by lightly packing the wounds with ribbon gauze soaked in a 2 per cent. solution of both citrate of soda and sodium chloride. From this time forward the child made an uninterrupted recovery. By the end of the third week the wound in the left flank was entirely healed, while those in the middle and in the right flank were reduced to small healthily healing sinuses. At the end of the month all the wounds were sealed.

True appendicitis is a rare disease in children under two years of age. Before the year 1897 no cases were recorded in the epitome of diseases to be found in the annual reports of the Hospital for Sick Children, Great Ormond-street. In that year there was a case in a child, aged 22 months, which passed off successfully without an operation. In 1902 there was a child, aged four months, with appendicitis in a hernial sac; an operation was performed and the child recovered. In 1903 a child, aged 21 months, suffering from some other disease, had a passing mild attack of appendicitis while in the wards of the hospital and got well without an operation. In 1905 there was a child, aged eight months, who had a ruptured appendix with general peritonitis; an operation took place, but the child died. In 1907 there were three cases of appendicitis, but all of them in hernial sacs, and these were all operated upon successfully. Summing up, then, since 1907 there were seven cases in all of appendicitis occurring in children under the age of two years. Of this number four of the cases were ones of appendicitis in hernial sacs. Of the remaining three cases, two of them appear to have been under physicians and did not pass into the hands of the surgeon, while the last one—the only one of this kind operated upon—died. This case of mine, therefore, in relationship to these statistics, stands alone, as it is the only case of a child under two years of age who, suffering with acute appendicitis not in a hernial sac, has been operated upon successfully and has lived. I happen to have heard privately of one other case similar to this one now published. The child was 14 months old and made an excellent recovery. Mr. Collier was the surgeon in this case also.

Crouch End Hill, N.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ECLAMPSIA.

BY W. BOXER MAYNE, M.R.C.S. ENG., L.R.C.P. LOND.,
ASSISTANT MEDICAL OFFICER, GREAT WESTERN RAILWAY WORKS, AND SURGEON TO THE VICTORIA HOSPITAL, SWINDON.

A FEW months ago I reported in these columns a case of eclampsia in which the convulsions at once ceased on the production and completion of labour, the morphia treatment having apparently failed. The following case, an example of the fact that some source of irritation to the system—viz., the pregnant uterus—is not by any means a necessary element in the causation of this terrible complication of labour, would, however, point to the great efficacy, in certain cases at least, of hypodermic injections of morphia in the control of the fits, even though the kidneys may be markedly deranged.

The patient, a young primipara, aged 21 years, had noticed that for about a month prior to her confinement her face in the morning had been somewhat puffed and she had been troubled with almost intolerable irritation of the skin. I was called to her confinement at about 9.30 o'clock one evening finding full dilatation and the pains weak. Progress being consequently slow I delivered with forceps. All went well till the placenta, &c., were passing the vulva when (at 10.15 P.M.) there came on a severe eclamptic fit and in the course of the next ten minutes two more occurred. I at once administered a hypodermic injection of half a grain of morphia and had the patient wrapped in a hot wet pack. At 10.45 P.M. a fourth fit came on and 35 minutes later a fifth. From this time to 7 A.M. on the next day the patient had no recurrence of the fits, and though at times she was restless and very sick she continued in a very heavy, dazed state. At 7 A.M. a sixth fit occurred, whereupon I gave the patient a hypodermic injection of a quarter of a grain of morphia and one-sixtieth of a grain of strychnine. At 9.30 and at 10.15 A.M. the seventh and eighth fits respectively occurred. I now, in addition to the hot packs that had been kept up throughout, gave the patient a saline injection of four pints (together with two drachms of bromide of potassium, 20 grains of chloral, one ounce of sulphate of magnesia, and one ounce of solution of acetate of ammonia) high up into the bowel. Until 1 P.M. no fit recurred, the patient lying absolutely motionless; at 1 o'clock, however, she had her ninth fit, half an hour later a tenth, followed shortly by the eleventh, each being as severe as the first. I then gave another hypodermic injection of half a grain of morphia. By 9.30 P.M. the patient had much improved and had become sufficiently sensible to be induced to drink two glasses of milk and some diaphoretic and bromide mixture. A very good night followed, the patient taking milk at intervals, and by the next morning she was able to recognise those tending her. During the day urine was passed freely, which on examination was found to contain much albumin. Whether on the second day of her illness the patient passed any urine it is hard to say since she was constantly in the hot wet pack. All albumin had disappeared by the fourth day.

Whilst taking precautions to produce abundant perspiration and free action of the bowels my experience in five at least out of six cases has been that hypodermic administration of morphia is a most valuable method of treatment in eclampsia whether occurring before or after labour. I only regret that in the case just described I did not push the morphia more.

Swindon.

A CASE OF VENTRICULAR HÆMORRHAGE SIMULATING ECLAMPSIA.

BY ALAN RANDLE, M.D., B.S. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,
LATE ASSISTANT MEDICAL OFFICER TO THE LAMBETH INFIRMARY.

I WAS called out early on Nov. 16th, 1908, to attend a multipara, aged 43 years, for a "fit." The friends gave a history of headache and lassitude for 10 days, culminating in a general convulsion lasting a few minutes. The patient was found to be six months pregnant but the fœtal heart was not audible. She was semi-conscious; the conjunctiva reflex was present and the pupils were equal and small; there was intermittent clonic twitching of the left shoulder muscles and purposive movements were retained; both knee-jerks were absent but no paralysis was discoverable. With the fit there had been no cry, no biting of the tongue, and no incontinence. The tongue was fairly clean and the pulse was weak and rapid. After staying with the patient for some time she recovered full consciousness and understood what was said to her, but could not speak. She was moved into the infirmary, where she recovered speech. The urine was found to be half solid with albumin, which only very gradually decreased under treatment. On the day after admission the patient got out of bed as she saw imaginary people in the ward; on the whole she was lethargic, but would speak when roused. She suffered intermittently from paralysis of the bladder and the bowel, necessitating catheter and enema; occasionally these functions were normal. Sensation was of the disordered type seen in hysteria, with no true anæsthesia. The patient was sometimes able to talk to her husband, though not to me. Five days after admission she gave birth to a six months partly macerated male fœtus, the skin peeling off it in places. The general condition slightly improved after labour, which was absolutely painless, and a confident diagnosis was made of eclampsia, with a large superadded functional element, accounting for her retention, disordered sensation, and intermittent aphasia. The patient continued in much the same state for three more days, when the pulse-rate went up to 130. On the next evening she had a fit after an enema. There was a general tonic spasm, followed by restless movements; the left pupil was dilated and fixed, oval in shape, with the long axis vertical. The right pupil was normal and the conjunctival reflex was preserved on that side. She soon became fully conscious

again and spoke to her husband. On the next morning she had two fits of the same nature and during the second she stopped breathing, although the heart continued regular and strong. Artificial respiration was carried out, but the heart gradually weakened and stopped.

At the post-mortem examination it was found that the kidneys were of the red granular type and that the liver was deeply congested, but there were no hæmorrhages into it or under the capsule. The heart was hypertrophied, but there was no atheroma of the vessels. There were a few minute hæmorrhages on the surface of the brain and a right ventricular hæmorrhage apparently starting from an anterior perforating artery and later bursting into the ventricle. Some of the hæmorrhage was old and the brain was softened and pigmented (even some of that apparently in the ventricle); the rest of the hæmorrhage was recent and it nearly filled both ventricles, extending down the iter to the fourth ventricle, pressure on the respiratory and vaso-motor centres obviously being the cause of death, the respiratory succumbing first.

Although cerebral hæmorrhage often complicates eclampsia this does not seem to me to be a case of the diseases co-existing. The liver and the kidneys were not typical of the condition, nor were the convulsions epileptiform in character. The pregnancy would undoubtedly much aggravate the existing renal disease and lead to a great rise in blood pressure, this in its turn leading to the hæmorrhage. The intermittent nature of the signs would seem to be due to the free absorption of lymph under pressure by the choroid plexus. I have reported the case owing to the great initial difficulty in diagnosis leading to serious error in prognosis.

I am much indebted to Dr. M. H. Quarry, the medical superintendent of the Lambeth Infirmary, for permission to publish this case.

Lambeth Infirmary, S.E.

Medical Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Gas in the Stomach.—Port-wine Coloured Urine.

A MEETING of this section was held on March 26th, Dr. W. G. SMITH, the President, being in the chair.

Mr. F. K. CAHILL read a paper on Gas in the Stomach. He defined the terms "fermentation" and "putrefaction"—the former being mainly applicable to the decomposition of "carbohydrates," the latter to the decomposition of "proteids" and "fats." The end-products of each process were discussed. The causal factors in the production of gastric gas were considered under the following heads:—(1) Air swallowing; (2) chemical gastric respiration; (3) mechanical gastric respiration; (4) inorganic production of CO_2; (5) organic production of CO_2 and associated gases; and (6) spasm of cardia or pressure from without. The treatment of the various causes—including "lavage," diet, rectal feeding, and drugs—was referred to, and a plea was made for the more careful investigation of the causes of "flatulency."—The PRESIDENT took exception to the distinction drawn between fermentation and putrefaction. He looked on putrefaction as a mere accident of decomposition; it was simply fermentation *plus* smell. He was not hopeful of the possibilities of intestinal antiseptic treatment, as none of the things used had come up to expectation.—Dr. M. F. COX said that it was a rare thing for an amount of air capable of causing trouble to get into the stomach by swallowing. He thought the troubles must be looked for within. They had such cases where mental trouble or sudden shock had led to gas being formed by a process which was probably neither fermentation nor putrefaction, and in which a great amount of misery and depression was relieved by the expulsion of gas. In such cases he thought the subjective sensations were as much to be accounted for by the depression associated with mental causes as by poisoning of the blood by the by-products of digestion, or the uneliminated products of liver digestion.—Sir JOHN W. MOORE said that people with bad teeth who could not masticate their food swallowed with it very considerable quantities of air. They were familiar also with the connexion between cardiac and vascular lesions and gas in the stomach. It was exceedingly hard to disinfect either the stomach or intestines, but symptoms could often be relieved by attention to the toilet of the mouth.—Mr. CAHILL, in reply, said that the distinction drawn between "fermentation" and "putrefaction" was only for clinical use, seeing that the processes exhibited no absolute line of demarcation. The stress laid on air swallowing by Sir John Moore was in agreement with the observations of himself. An illustrative case of inflammable gas (CH_4) was quoted, a parallel to that noted by the President from the work of Sir Henry Marsh.

Dr. A. R. PARSONS read notes on a fatal case of Port-wine Coloured Urine (Hæmatoporphyrinuria). The patient came under his care early in June suffering from diffuse abdominal pain, vomiting, and constipation. The urine, on standing, become of a deep port-wine colour (specimen exhibited). It contained neither albumin nor blood. Neither trional nor sulphonal had been administered at this time. After ten days the patient improved and went away for a change. The symptoms, however, recurred and she was admitted to hospital towards the end of June. Abdominal pain was present. Sleeplessness was pronounced, and she was given on four consecutive nights 15 grains of trional. The urine was of a similar colour to that passed early in her illness. Towards the end of the first week after admittance she complained of severe pain in her feet, and on July 7th her arms were almost powerless and she was so ill and feeble that she could barely move in bed. On July 10th the rectal sphincter was relaxed and she commenced to pass fæces under her. A few days later swallowing became difficult and death took place in a little over two weeks after her admission to hospital and in less than seven weeks from the onset of her symptoms. Specimens of the urine passed shortly after her admission to hospital and a day or two before her death were exhibited. They were of a rich port-wine colour and, though nearly three years old, were acid in reaction and showed no evidence of decomposition. Though hæmatoporphyrin was probably present, the red colour was not due to this substance, and it was considered that the term hæmatoporphyrinuria applied to urine of this class was misleading.—The paper was discussed by the PRESIDENT and Dr. EUSTACE.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 2nd, Dr. W. H. Cheetham being in the chair.—Dr. T. Churton read a paper on Some Recent Compensation for Accident Cases. He said that in the examination of such cases six questions occur: (1) Does any lesion really exist, and, if so, where? (2) What is its nature? (3) Was it caused, either wholly or partly, by the alleged injury? (4) Was the injury accidental? (5) Will recovery take place? (6) and, if so, in how long? Upon (1) some suggestions were made concerning the investigation of symptoms. Upon (2) it was held that in a disputed case each of the medical witnesses should be required to state in writing the reasons for his opinion as to (*a*) the exact *site* of the lesion which is causing the symptoms; (*b*) its *nature*, considered as a distinct and separate problem; (*c*) its complete *causation*, with an estimate of the share taken therein by the injury, either directly or by its effects, acting in their turn as causes. If, for example, one man asserts that in some defined part of the nervous system there is a chronic inflammation—a pericellular or perineuronic lesion—of traumatic origin, and another maintains that there is no inflammation, but only (so-called) functional disorder, intracellular, and a metabolic hurrying or slowing, or a biochemical change—or, it may be, that there is no lesion of any kind, they should give their reasons in such a form that they could be submitted to a selected neurologist of judicial position and rank. And the same with respect to any other lesion, medical or surgical. Upon (3) a distinction was drawn between causes which were essential, determining, and contributory. And it was argued that if in a mass of interdependent organs like the body, a lesion produced by mechanical or other force gave rise to a succession of alternating effects and causes, the injury must be held responsible for all of them. It appeared to have been maintained by at least one insurance office that the effects of an "accident" must be immediate, direct,

unaided, almost instantaneous, and although they may not be instantly recognisable, must be, when found, such as clearly occurred at the time of the accident, did not exist before, and were not introduced after it. The insurer's view is that a true accident, however small, is the link in the chain of causation against which he wishes to insure. Other causes he may avoid or remove or oppose; an accidental injury is by definition unavoidable. 4. The word accident appears to be used sometimes to mean the *force applied*—as in the case of death from pneumonia occurring six days after a fall upon wet ground, in which the question before the Court of Appeal was whether death was due to the accident, meaning the shock produced by the (admittedly accidental) fall—and sometimes to mean the mode or the circumstances in which the force was applied, as in the cases of anthrax in a wool-sorter, heat-stroke in a fireman on a liner, and lead poisoning in a plumber, in which the question was whether the bacillus, the chemical, and the thermal force, acknowledged to be the cause of death in the respective cases, was an accident in the sense of having been acquired or *applied accidentally*. Dr. Churton doubted whether any condition or event which might be expected to occur in, and as a part of, the ordinary day's work, anything foreseen and certain to happen often or even occasionally, could properly be called an accident. Special terms and agreements should be made for hazardous employments.—Dr. Alexander D. Sharp read a paper on Modern Methods of Examining the Larynx, Trachea, Bronchi, and Œsophagus. Brüning's bronchoscope, together with the accessory apparatus, was shown. One or two patients being in attendance, the method of using the instrument was demonstrated and an excellent view was obtained of the larynx, trachea, and bronchi. It was pointed out that unnecessarily strong solutions of cocaine were generally recommended and that a perfect anæsthesia could be obtained by using a 5 per cent. spray for the pharynx, 10 per cent. application for the posterior surface of the epiglottis, and from 10 to 15 per cent. for the trachea and bronchi. Cases of temporary aphonia following bronchoscopy were attributed to faulty anæsthesia and indifferent manipulation. In order to get an extensive view within the trachea, the distal end of the bronchoscope must be controlled so as to keep it in the centre of, and parallel with, the trachea, as there was a tendency for the end of the tube to direct itself against the anterior wall. Care must be exercised in withdrawing the tube as slowly as it was introduced to prevent the end tilting against the trachea or against the cricoid and arytenoids as it leaves the larynx.—Dr. E. F. Trevelyan showed a woman, aged 25 years, with Double Arm Paralysis of Plexus Type after Influenza. Recovery had already largely taken place in the left arm and the right arm was improving.—Mr. R. Lawford Knaggs showed a case of Fractured Leg in which there was no union but a breaking down of the callus at the end of six weeks, and in which rapid consolidation occurred under antisyphilitic treatment. —Cases and specimens were also shown by Mr. J. Stewart, Mr. A. E. A. Pearson, Mr. B. G. A. Moynihan, Dr. A. Bronner, Mr. J. F. Dobson, Mr. W. C. Morton, Dr. A. G. Barrs, and Mr. E. Solly.

UNITED SERVICES MEDICAL SOCIETY.—A meeting of this society was held on March 10th, Colonel D. Wardrop, Commandant of the Royal Army Medical College, being in the chair.—Major W. W. O. Beveridge, R.A.M.C., gave a demonstration of Some Recent Methods of Sewage Analysis. These comprised the process of Letts and Blake for the estimation of dissolved oxygen in sewage effluents, Adeney's improved form of apparatus for observing the rate of absorption of oxygen by polluted waters, and a method devised by himself for extracting the total gases in sewage. Major Beveridge prefaced his demonstration by a few remarks on the importance of the fact that as an immediate and essential result of the mixing of a sewage effluent with a tidal water the more or less complete absorption of the oxygen dissolved in the latter takes place. It was, therefore, necessary in the case of any sewage to know its purity or the degree of putrescible matter present by ascertaining, on the one hand, the amount of dissolved oxygen present in the sewage, and, on the other, by estimating the amount of oxygen it was able to take up, which might be termed its "oxygen appetite." Taking a tidal water composed of equal parts of salt and fresh water, the lecturer pointed out that whereas saturation might be represented by a volume of 6·20 cubic centimetres of oxygen per litre, the lowest limit to which it was safe to de-oxygenate such a water was about 3·4 cubic centimetres per litre. Below this point there would be danger of destruction to fish. Proceeding Major Beveridge demonstrated the process of Letts and Blake for estimating the amount of oxygen dissolved in an effluent. This process depended on the fact that oxygen dissolved in water was absorbed by a ferrous salt plus an alkali (i.e., ferrous hydrate). The amount of oxygen dissolved in an effluent could therefore be estimated by adding a definite quantity of ferrous sulphate and then an excess of ammonia. The oxygen in solution attacked the ferrous hydrate, and the amount of hydrate so attacked was calculated by the amount left unaffected. The latter was estimated by titration against a standard solution of an oxidising agent—e.g., bichromate of potassium. It was advised that the suspended matters should be removed and estimated separately, as small variations in these might affect the result. Major Beveridge then demonstrated Adeney's process for the estimation of the amount of oxygen absorbed by a sewage, and the rate of its absorption, in which the partial vacuum caused by the absorption of oxygen in one flask was measured by the rise of fluid produced in another flask connected by a glass tube. Finally a method was shown devised by Major Beveridge for the extraction of all the gases in a sewage by a process of boiling under reduced pressure, the gases so extracted being collected and afterwards analysed in a specially modified Orsat gas apparatus.—Mr. N. Bishop Harman demonstrated a piece of apparatus, giving a diaphragm test for binocular vision, founded on the fact that when a man with normal vision in both eyes looks through a hole in a diaphragm held at some little distance from him the eyes look crosswise through the opening, the left half of the field being viewed by the right eye, and the right half by the left eye. The instrument consists of a flat ruler 44 centimetres long with a rack at one end to hold the test-object cards and a screen at 11 centimetres from the rack in which an aperture, either round or square, of an area of 1·7 square centimetres is cut. The test objects are of different natures, written type, pictures, or geometrical patterns for children and uneducated people, &c. The uses of the test are to determine the equality or otherwise of the vision in the two eyes, to determine the presence, absence, or any defect of binocular vision, to exercise the vision in squinting eyes, to detect malingerers feigning monocular blindness, and to demonstrate certain physiological phenomena connected with the perception and suppression of images. The method of working was then demonstrated by Mr. Bishop Harman, and the meeting closed with a vote of thanks to him for his demonstration.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on April 2nd, Mr. Edward Sergeant, the President, being in the chair.—A discussion was opened by Dr. John Robertson upon the Prevention of Tuberculosis among Cattle. He pointed out in the first instance that stock-owners sustained a very considerable loss owing to the general wasting which occurred in cattle from the disease, from the inability to guarantee to the butcher freedom from tuberculous disease, and from the shortening of the milking period of good milkers by probably 50 per cent. The principal methods which had been proposed for clearing herds of tuberculosis were those of Professor Bang, Professor Ostertag, and of von Behring. The essentials of Bang's method were: (1) the testing of all animals with tuberculin; (2) the complete and continuous separation of the reactors from the non-reactors, with the necessary disinfection; (3) the feeding of all calves on tubercle-free milk; (4) the repeated testing of all non-reacting animals; (5) the disposal of the reactors at the most profitable time; and (6) the slaughter of all animals with udder tuberculosis. In Ostertag's method reliance was placed on conjoint veterinary inspection and bacteriological investigation, while the method of von Behring depended for its success upon increasing the resistance of young animals to the tubercle bacillus by the injection of attenuated cultures. Dr. Robertson considered that Bang's method was the only reasonable one for general adoption. Every opportunity must be given for the establishment of an efficient public health veterinary staff for the examination of dairy cattle, and cowsheds must be brought up to a

reasonable standard, for to attempt to reduce tuberculosis in insanitary cowsheds would be a mischievous waste of money. It had been ascertained in Birmingham as the result of the operation of the model milk clauses that 14 per cent. of the churns of milk coming into the town contained tuberculous milk so that some protective measures were necessary. A scheme on the lines of that suggested by Bang had been adopted and was being carried out in cowsheds situated within a radius of ten miles from Birmingham. A certificate was issued quarterly to those farmers who kept their herds free from tuberculosis and a list of such farmers was printed and supplied to any inhabitant of Birmingham who desired to have one.—Sir Shirley Murphy said that it was clearly to the interest of the dairyman to eliminate from his herd tuberculous cattle. He asked whether cowsheds were really necessary and thought that if cows were left to live in the open as nature intended they might predict that tuberculosis would be very much lessened. He insisted upon the necessity for branding every cow found to be tuberculous; otherwise an animal which had been tested and found to react could be disposed of and traced only with the greatest difficulty.—Dr. J. Niven regarded as an essential part of the programme the alteration of existing cowsheds, but it was not easy to see how that could be brought about, for the sanitary authorities were so largely composed of those interested. All milk dealers he thought should be required to provide themselves with a certificate stating that their cowsheds were good. He doubted if farmers could be prevailed upon to keep their cattle in the open, for more food would be required.—Dr. Chalmers urged that farmers should protect themselves against loss by insurance.—Dr. F. E. Fremantle, speaking from the point of view of the producer, feared that the interests of the town and country were divergent, and pointed out that if the cost of production were increased and the price of milk raised the result would probably be an increased consumption of condensed milk among the poorer classes. He was not sanguine of poor people demanding a pure milk-supply at an enhanced cost.—The President deplored the fact that in many country districts there was practically no inspection of cowsheds at all. He cited one district in which modified regulations were adopted, but the chairman of the sanitary authority frankly asserted that they were of such a character that they need not be carried out.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 1st, Mr. R. F. Jowers, the President, being in the chair.—Sir Malcolm Morris gave an address upon Eczema, its Nature and Treatment. He said that he would consider first the eczema of the young child, then that of puberty, then that of adult life, and if time allowed that of old age. The following is an abstract of his remarks: If a child six months old is brought with weeping eczema of the face and scalp use hot boric fomentations to get off the crusts; do not allow soap and water. Then powder with emol keleet, which is genuine fuller's earth, adding perhaps zinc oleate and boric acid, or calamine lotion. In acute eczema at all ages do not use ointments until the discharge stage is over. When the discharge has stopped use a zinc or zinc and ichthyol cream. Internally small doses of mercury are beneficial. Vaccination rarely "takes" during an acute eczema, and should be postponed until the eczema is entirely cured, or it may cause a fresh attack. Powdered oleate of zinc rubbed in is the best preventive of a relapse. If the child is seen early with only a little scurfiness of the face or a crust on the scalp, boric acid ointment or oil should be ordered, and very little washing allowed. If a child aged 14 years be brought with eczema (*a*) inquire if there have been attacks in infancy, if so, similar treatment is applicable; (*b*) examine the palms of the hands and soles of the feet for xeroderma, dry smooth palms, and keratosis pilaris of the extensor surfaces. In this case prolonged baths, the use of soap and glycerine, are indicated; the sweat glands do not act properly. (*c*) If there are patches on the arms or legs alternating with asthma or other nervous phenomena the eczema is of the neurotic type which goes on all through life. It is very pruriginous, very excitable. Tar should be used to allay irritation, arsenic internally, or a visit to the arsenical springs of La Bourboule or Levico may do great good. In adults if there are symmetrical scaly patches, examine the head for scurf, eczema seborrhœicum, but this must be distinguished from pityriasis rosea, which begins with a circular patch on the trunk or limbs, looking like ringworm; this is followed by a general eruption which does not spread below the knees or elbows. For seborrhœic eczema use soap and water followed by mild sulphur ointment, and for the scurfy scalp resorcin in vaselin. Weak red oxide of mercury ointment or one of carbolic and menthol or lotions of tar may also be useful. Sea-bathing and wetting the head every day make eczema worse. At the change of life the most prevalent trouble is acne rosacea, eczema of the face, arms, and vulva. For this aperients and tonics judiciously combined, as in the mist. ferri sulph. c. quin., are most valuable; ichthyol internally. Externally soothing remedies, such as calamine lotion, tinted ointments of boracic, ichthyol, or weak sulphur or resorcin.—The paper was discussed by the President, Dr. Walter Broadbent, and Dr. C. F. Bailey, and a hearty vote of thanks was passed to Sir Malcolm Morris.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on April 7th, Mr. W. Coates, the President, being in the chair.—Mr. J. E. Platt related a case in which he had excised a considerable portion of the Radial Artery in a case of Suppurative Arteritis leading to Secondary Hæmorrhage. The patient, a boy, aged four years, was admitted to the Royal Infirmary with a very extensive deep cellulitis of the forearm. Incisions were made on the day of admission, but two days later hæmorrhage occurred and the brachial artery was tied. Eight days afterwards hæmorrhage again occurred and it was therefore decided to open up the wounds and to search for the bleeding vessel. The upper part of the radial artery was found to be in a sloughy condition and two inches of the vessel were removed, the divided ends being ligatured with catgut. The patient, although greatly exhausted at the time of operation, afterwards recovered well and the functional use of the arm was perfect. Mr. Platt also referred to a similar case which he brought before the society 15 years previously in which he had removed four inches of a sloughing brachial artery with complete success, the patient making a perfect recovery. He pointed out that this method of treatment was merely an extension of the ordinary rule for the treatment of secondary hæmorrhage—viz., dealing with the vessel at the site of the bleeding—and that in the cases mentioned it was the only alternative to amputation of the limb. The method was more likely to be of use in the case of the arm than of the leg, owing to the freer collateral circulation.—Dr. W. J. S. Bythell read a paper, illustrated by lantern slides, upon the Radiography of Renal and Ureteral Calculi. The paper dealt chiefly with the differential diagnosis between shadows due to calculi and those caused by other objects, such as calcareous glands. Examples were also given to show the advances made in x ray work, whereby it is possible to distinguish the size and structure of the kidney itself, and thus to a large extent make out the pathological condition of that organ. Such cases included several of pyonephrosis and tuberculous kidney.—Dr. George Ashton made a short communication on the Hypodermic Injection of Atropine and Strychnine in Chronic Alcoholism. He had tried this treatment in three cases, all confirmed alcoholics. The solution used was a mixture of liquor atropinæ sulphatis and liquor strychninæ hydrochloridi in the proportions of 1–4. Five minims of this solution were injected twice daily into the outer surface of the calf of the leg. The first patient had 70 injections, the second had 34 injections, and the third 30 injections. The general health was considerably improved, but the underlying disease—the craving for alcohol—was unaffected. His patients strongly objected to the repeated pain of the injections and to the dryness of the mouth caused by the atropine. Dr. Ashton had reluctantly come to the conclusion that the treatment was absolutely useless.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 7th, Dr. P. Boobbyer, the President, being in the chair.—Mr. A. M. Webber read a paper on Ante-partum Hæmorrhage. In this he classified the causes under injuries of the genital tract, disease of the cervix or vagina, and separation of the placenta. The last cause of hæmorrhage was again subdivided into accidental or unavoidable according to the implantation of the placenta. All these causes were illustrated by cases, Mr. Webber carefully reviewing the treatment of placenta prævia and urging the value of antiseptic

douching in addition to the usual precautions against maternal sepsis. The paper was discussed by the President, Dr. J. H. Thompson, Mr. T. Geraty, Dr. W. Tibbles, Dr. A. J. Sharp, and Mr. W. B. Blandy, and Mr. Webber replied.—Dr. C. H. Cattle showed a woman, aged 29 years, the subject of Diffuse Scleroderma, a sequela of influenza four years previously. The whole of the upper half of the trunk, with the exception of the hands and backs of the elbows, was affected, as well as the head and neck.—Dr. F. H. Jacob showed the Characteristic Spectrum of Methæmoglobinæmia occurring in an elderly patient as the result of taking phenacetin to excess; and also a skiagram of the Pelvis and Hip-joints in an obscure case of Double Abnormality of the Cervix Femoris.—Mr. Webber showed a Heart with Patent Septum Ventriculorum fatal at the age of eight years in a boy. The kidneys from this case were also shown and were in a state of advanced pyelonephritis as the result of congenital stenosis of the meatus urinarius.

Reviews and Notices of Books.

Oxford Medical Publications: Diseases of the Spinal Cord. By R. T. WILLIAMSON, M.D. Lond., F.R.C.P. Lond., Assistant Physician, Royal Infirmary, and Lecturer in Medicine, Victoria University, Manchester. With 183 illustrations and 7 plates. London: Henry Frowde and Hodder and Stoughton. 1908. Pp. 432. Price 15*s.* net.

IN a subject so complex as neurology, to which additions are almost constantly being made from the results of physiological, pathological, and clinical research, there is always room for a book of reference in which the subject, or some branch of it, is considered in a manner more catholic and exhaustive than is necessary for a student's text-book and in which the results of recent work can be set forth and discussed. Dr. Williamson has devoted special attention to diseases of the spinal cord, and in the book before us, although he modestly disclaims any intention of furnishing an exhaustive account of spinal diseases, he has supplied in a manner wholly admirable a very thorough and suggestive consideration of them. He devotes special attention to the physiology and pathology of these conditions and these aspects of his subject are very well and liberally illustrated.

The structure of the spinal cord is described in some detail, and an interesting account is given of the blood-supply of the cord and of the relation of spinal diseases to the distribution of the blood-vessels. Some useful diagrams are given showing the parts of the cord supplied by the various arteries. The general pathological histology of the spinal diseases is next dealt with, and the various forms of degeneration, chromatolysis, and other changes occurring in the nerve elements are described clearly and fully, while the conditions under which they occur are enumerated. The tracts of ascending and descending degeneration are carefully described and figured, and their origin, course, and functions are discussed so far as these are known. Under this heading some of the tracts which are less generally known are included, such as v. Monakow's, Helweg's, and Hoche's bundles, Flechsig's oval field, and the triangle of Gombault and Phillippe. The functions of the spinal cord are considered at some length, and a careful and critical summary is given of the various views at present put forward in regard to the vexed questions of the paths of conduction of the different forms of afferent impressions and of the crossing of sensory fibres. The views of Edinger, Gowers, Sherrington, and Head and Thompson are given. The reflex, trophic, vaso-motor, and visceral functions of the cord are similarly dealt with.

A useful section is devoted to a general consideration of the symptoms of diseases of the spinal cord. These are classified into motor, reflex, sensory, and trophic symptoms, paralysis of bladder and rectum, and ocular symptoms. Each is described in detail, the methods of eliciting it are set forth, its indications and the conditions in which it occurs are then enumerated. The author incorporates not a few original observations in this section. The account given of the reflexes may be mentioned as of special interest. The tendo Achillis jerk is stated to disappear sometimes before the knee-jerk in conditions in which the latter is usually lost—e.g., in tabes, general paralysis of the insane, peripheral neuritis, diabetes mellitus, and in alcoholic heart failure. The vibrating sensation as tested by a tuning-fork, of which the foot is placed over subcutaneous bony prominences, is also described at some length, and is regarded as a delicate test for detecting slight impairment of sensation. Electrical examination and the uses of lumbar puncture are considered in a separate section. In relation to the reaction of degeneration, Dr. Williamson lays stress upon the sluggish and prolonged contraction of degenerated muscle as contrasted with the sharp and short contraction in the normal state. The diagnosis and localisation of diseases of the spinal cord are carefully and clearly discussed. Useful tables of motor localisation and sensory distribution are given for purposes of anatomical or topographical diagnosis. General rules are also given to assist in forming the pathological diagnosis. The effects of unilateral and complete transverse lesions are described, and the characters of Brown-Séquard's paralysis are set forth. The question of the state of the reflexes in complete transverse lesions is critically considered, and the general conclusion arrived at is that while the condition of absent reflexes and flaccid paralysis described by Bastian is the rule there are exceptions.

The general classification adopted by Dr. Williamson is into four clinical groups—viz., diseases in which the prominent symptoms are those of a transverse lesion of the cord, of atrophic paralysis, of spastic paralysis and of ataxia, and a section is devoted to each of these. The classification is a convenient one and saves a considerable amount of repetition. In the first of these groups the various conditions to which the term myelitis is applied are considered and differentiated from one another. Compression myelitis is described in a most thorough and careful manner, and great stress is laid upon the necessity for careful examination of the spine in all cases of lateral sclerosis of obscure nature. In this same section the subjects of spinal tumours and spinal cysts are discussed in a most thorough manner, and the account is one of the best with which we are acquainted. The description of the symptoms of lesions of the cauda equina and conus terminalis is also worthy of special mention, and the diagnosis of these conditions is carefully discussed.

The next section deals with diseases causing atrophic paralysis and includes the various forms of acute, subacute, and chronic poliomyelitis, progressive muscular atrophy, amyotrophic lateral sclerosis, and syringomyelia. In connexion with the pathology of progressive muscular atrophy, Dr. Williamson records a case in which the symptoms were typical of the Aran-Duchenne type, and in which death occurred 22 years after the onset of the disease. Neither on clinical examination nor after careful microscopical examination after death was there any evidence of amyotrophic lateral sclerosis, and therefore he regards the two conditions as separate diseases or distinct forms of one affection, in opposition to the contention of some authorities that there is no distinction between these conditions and that they own a common pathological basis. At the same time he admits that the clinical diagnosis of progressive muscular atrophy cannot be an absolute one since features of amyotrophic lateral sclerosis may supervene at a later date, and further, that cases apparently typical of progressive

muscular atrophy may show post mortem the changes of amyotrophic lateral sclerosis.

The section devoted to diseases causing spastic paresis and paralysis contains very good accounts of primary lateral sclerosis and disseminated sclerosis. In connexion with the former the pathological evidence of its existence as a definite entity apart from secondary lateral sclerosis is described. The next section deals with diseases in which ataxia is a prominent symptom—including tabes, Friedreich's disease, ataxic paraplegia, and the combined scleroses. The description given of tabes is most complete and constitutes a very useful study of the disease. The account given of the pathological changes found in this disease is exhaustive and admirably illustrated, while Dr. Williamson includes a thoughtful and critical account of the various views which have been suggested to account for the pathogenesis.

The concluding sections deal with inflammation of the spinal meninges, the clinical forms and pathological anatomy of spinal syphilis, and traumatic lesions of the spinal cord. The various histological methods used in pathological investigations of the spinal cord are carefully described in detail in an appendix.

Dr. Williamson may be congratulated upon a suggestive and useful book, which we have read with great interest.

Abdominal Tuberculosis. By A. ERNEST MAYLARD, M.B., B.S. Lond., Surgeon to the Victoria Infirmary, Glasgow, &c. London: J. and A. Churchill. 1908. Pp. 360. Price 12*s.* 6*d.* net.

Dr. Maylard is widely known as a writer on surgery, especially on the surgery of the abdomen; his "Treatise on the Surgery of the Alimentary Canal" and his book on "Abdominal Pain" have both afforded material assistance in the advance of the study of abdominal disease. He is also the chief advocate of transverse incisions of the abdomen, and his support of this new departure in abdominal surgery is already inducing many others to adopt the method. In the present work Dr. Maylard has made an important contribution to surgery, for this is, so far as we are aware, the only treatise on abdominal tuberculosis in the English language. Tuberculous affections are important in every part of the body, but they are of peculiar importance in the abdomen, for in whatever organ the disease may arise it extends quickly to neighbouring structures, though it is noticeable that some of the abdominal viscera very rarely suffer from tuberculosis, for the pancreas, stomach, and duodenum appear to be peculiarly exempt, and when they are affected it is nearly always as a part of a general infection. The parts that are principally affected primarily are only the bowel and the female pelvic organs. Dr. Maylard holds that a primary tuberculous affection of the peritoneum is not nearly so rare as it is considered to be by most, and he thinks that the bacilli are probably conveyed through the bowel wall by the lymphatics. Each abdominal organ is taken in turn, the manifestations of tuberculous disease of it are described and the treatment is considered, while the clinical histories of many cases illustrative of the disease concerned are quoted, and these serve to emphasise the author's conclusions.

In the prognosis of tuberculous peritonitis Dr. Maylard lays down the rule that the real gravity of a case is directly proportional to the severity of the disease in the part whence the peritonitis has originated. As to the operative treatment of tuberculous peritonitis, the author considers that as the cases in which success is most marked are those in which fluid is taken away, it would seem as if removal of some toxic agent gave the tissues a greater chance of overcoming such of the virus as remains. He is not in favour of very early operation in these cases and he thinks that medical treatment should be thoroughly tried before any surgical procedure is undertaken. When possible the infecting focus should be removed. Dr. Maylard points out that in operating to attempt to detach or to separate forcibly firm intestinal adhesions is to run the gravest possible risks, for it is often much easier to tear the delicate serous coat of the bowel than it is to break through the fibrous adhesion. The author is unwilling to lay down any hard-and-fast rule as to operation in tuberculous peritonitis; he holds that every case must be treated on its own merits. Dr. W. K. Hunter has contributed a chapter on the General and Prophylactic Treatment of Tuberculosis, which forms a useful supplement to a work on abdominal tuberculosis. In this chapter also are considered the vaccine and serum treatments.

We have been much pleased with the book, which is fully illustrated with reproductions of photographs of specimens in many hospital museums. We would suggest that the author should state more explicitly his own views on the questions discussed; as a rule, we are left to gather it from indications here and there. This is equivalent to saying that Dr. Maylard is very fair to all views on contentious matters, but sometimes a little more definite leading would be appreciated. The references to the bibliography are ample. We doubt whether it is, on the whole, preferable to have a separate index for proper names; it is in some ways better to have only one index in which, if necessary, the names of persons can be distinguished by the use of a special type.

The Medical Annual: A Year-book of Treatment and Practitioners' Index, 1909. (Twenty-seventh year.) Bristol: John Wright and Sons, Limited. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. Pp. 756, 54 plates, many coloured, and 159 illustrations. Price 8*s.* 6*d.* net.

THE *Medical Annual, 1909*, which now makes its twenty-seventh appearance, lives up in every way to its subtitle. Every fact of importance not only to the practitioner but also to students, and especially post-graduate students, has been included, and the whole forms a concise review of the work done in medical science during the preceding 12 months.

The descriptive articles, arranged alphabetically, are written by men well known in connexion with the subjects with which they deal. The work is beautifully illustrated, containing 54 plates, many of which are coloured, 14 stereoscopic and 159 smaller illustrations. The section dealing with therapeutics is well up to date and embraces recent views and results concerning atoxyl, lactic acid, serum-therapy, radio-therapeutics, and electro- and x ray therapeutics. The acute infectious diseases' section covers the important work done recently in investigating the infectivity of patients who have recovered from typhoid fever and of those who are brought into contact with them but have not actually suffered from the disease. These cases have been termed "carriers" and it is highly probable that further investigation will show that they are the means by which the strain of the infective organism bacillus typhosus is kept in perpetual existence in nature. In the article on typhoid fever is found an extremely good account of the most recent researches on this subject. Professor Sondern of New York contributes an important article on the subject of albuminuria; he points out very clearly that albumin and casts may be found in the urine of children without the existence of disease of the kidney. In connexion with the feeding of infants details are given of the most important recent innovation in the use of artificially soured milk. It is as yet *sub judice* what value this new method may have, but it certainly appears to have advantages over butter-milk

which has been used hitherto. Buttermilk has the disadvantages of varying greatly in composition, contains but little fat, and its bacterial contents are promiscuous. In addition to the lactic acid bacillus many undesirable "aliens" may be present. Artificially soured milk is made from pure milk, no fat is abstracted, and a pure growth of the required lactic acid bacillus is added without introducing any "aliens." The lactacid milk so prepared is found to be valuable in curd digestion when fermentative diarrhœa occurs in infants, and it is also said to do good in specific infections of the intestine brought about by the bacillus typhosus or the bacillus of tubercle. Dried milk has also recently come into use in the treatment of infantile marasmus and other conditions in which nutrition is difficult.

The successful use of some of the newer hypnotics, chloretone and trional, in the treatment of chorea is recorded. The part believed to be played by the common house-fly in the etiology of summer diarrhœa, especially its supposed rôle as a carrier of infection, both to breast- and hand-fed infants, gives interesting reading in view of our experience of flies being carriers of enteric infection abroad. The evidence supporting the spirochæta pallida as the causal agent of congenital syphilis is still further confirmed and treatment by mercury and iodide has not been discarded in favour of atoxyl or soamin. In the section dealing with nervous diseases reference is made to the considerable amount of work that has been done and to the fresh light thrown on the pathology of anterior poliomyelitis. Attention is also directed to the treatment of trigeminal neuralgia by Schlösser's method of deep alcohol injections into the nerve trunks as they emerge from the cranial cavity. Freud's psycho-analytic method of treating hysteria is described as well as the advances made in the treatment of hysterical aphonia, chorea, facial hemispasm, and other nervous maladies. In dermatology the successful treatment of warts, trophic ulcer, lupus erythematosus, rodent ulcer, lupus vulgaris, &c., by ionisation is discussed, as well as the treatment of many skin diseases, acne vulgaris, leprosy, and erysipelas by Sir A. E. Wright's vaccine method. The urgent advisability of excision of the hard chancre wherever it is possible has been demonstrated by Neisser and is endorsed by Morris. In tropical medicine interesting reference is made to sleeping sickness, plague, blackwater fever, and spirochæte fever. We would suggest that this section might with advantage be made to cover other protozoal tropical diseases at which work is daily being added to, and for which there is considerable need felt for literature epitomised in a work of the nature of that under review. In the section on gonorrhœa reference is made to the beneficial treatment of gonorrhœal arthritis and gonorrhœal vulvo-vaginitis in children by vaccine. Vaccine therapy in rhinology and in suppurative conditions of the labyrinth is discussed under their respective headings.

The sections on ophthalmology, obstetrics, gynæcology, and general surgery are all well written, but no striking advances in new work can be recorded. Dr. Lucas Championnière's methods of treating fractures without immobilisation may influence the teaching on this subject; a full account is embodied. Sir C. B. Ball deals with recent progress in rectal surgery in a masterful manner, and the surgery of the abdomen, especially that dealing with abdominal injuries, is particularly well written and up to date in every detail. Part III. covers sanitation, legal decisions, surgical and medical appliances, and pharmacy, all of which should be useful for ready reference. We have no hesitation in recommending the *Medical Annual* to all medical men; it should hold a permanent place in every library and could with advantage be issued by the Crown to medical officers serving in the public services at home and abroad.

Medical Gynecology. By SAMUEL WYLLIS BANDLER, M.D., Adjunct Professor of Diseases of Women at the New York Post-Graduate Medical School and Hospital. With original illustrations. London and Philadelphia: W. B. Saunders Company. 1908. Pp. 676. Price 21*s.* net.

THIS book has been written in an endeavour to present the non-operative side of gynæcology. At the present time surgical treatment plays so large a part in the training of the gynæcologist that it is well that he should be reminded how much can be accomplished with care and patience by the medical treatment of many of the cases which come under his charge. The teachers of this branch of medicine, in some schools at any rate, are not free from blame; the failure on their part to devote a sufficient amount of time to teaching students the importance of minor gynæcology is largely answerable for any excessive tendency that there may be at the present day to recommend patients over quickly to seek the advice of the surgeon. No doubt this condition of things has been brought about in the revolt against the excessive local treatment which characterised the gynæcologist of not so many years ago. Dr. Bandler has done valuable service in placing before his readers a clear account of the many methods of treatment which are available for the practitioner. There is of necessity a good deal of repetition in the book, as the author, for example, devotes a number of pages to a consideration of the treatment of gonorrhœa, much of which has again to be repeated when the various affections largely caused by the gonococcus, such as cervicitis, vaginitis, and endometritis, are discussed.

In the section dealing with the examination of the bladder we are surprised to find no mention of Kelly's endoscope, in our opinion much the best instrument for this purpose. The chapters dealing with the various methods of medical treatment are very complete and good, and even if we do not agree with all the author's suggestions yet the reader will find that practically every method of treatment which is likely to be of any avail is well described. Special stress is laid, and rightly, on the many advantages of the use of massage and of the different forms of baths in gynæcology. Dr. Bandler regards with special favour the Nauheim bath in the treatment of different forms of pelvic inflammation of a chronic character and in the treatment of different nervous and neurasthenic states.

Besides these chapters on general methods, the two best sections in the book in our opinion are those dealing with gonorrhœa and constipation. The first, extending over some 65 pages, is particularly good and contains a great deal of very useful information. Whether the statement with which the author starts is really correct—namely, that a purulent vulvo-vaginitis in children is due in the vast majority of cases to the gonococcus—we very much doubt. In our experience it is certainly not a fact. Possibly most of the cases of vulvo-vaginitis seen by the gynæcologist are due to the gonococcus, but the great majority of cases of vulvitis seen in the out-patient department of a children's hospital certainly are not, and are in reality examples of the "strumous" vulvitis of the old writers. The author quotes Bumm's method of treating cervical gonorrhœa with favour and is evidently on the side of those who regard these cases as very important and attack them with vigour. The section on constipation has been contributed by Dr. George Mannheimer, and is a well-written account of the treatment of a very troublesome condition. He lays special stress on the importance of correcting faulty habits and the institution of a proper diet. With this, when necessary, he combines the use of oil injections, gymnastic exercises, and

the employment of massage and of electricity. Hydrotherapy is also most efficacious while drugs he holds should be used only as a last resource.

There is, as we have said, a good deal of repetition in this work, and it is unduly bulky, but Dr. Bandler has succeeded in carrying out his intention and the student will find in the book a very fair representation of the most approved and modern methods of the medical treatment of gynæcological cases. The illustrations are not of any particular value. There is a fair index.

Précis de Stomatologie. By J. REDIER. Vol. I. Paris: F. R. de Rudeval. 1909. Pp. 542. Illustrated. Price 5 francs.

THE ground covered in this volume includes the development and anatomy of the teeth, abnormalities of the teeth, the complications of dentition, and caries of the teeth. On reading the book we cannot help feeling that if an international nomenclature of dental diseases existed a large amount of misunderstanding would be avoided. Take, for example, the use of the term erosion; in this country and in America the term is limited to a progressive destruction of the tooth tissue due in many cases to abrasive agents; in France the term is used to describe defects of the teeth arising from constitutional causes and usually known in this country as hypoplasia of the teeth—in other words, two totally dissimilar lesions are described by a similar term. Throughout the book the author has adopted with success plain line diagrams instead of more elaborate illustrations in describing models of the teeth and appliances; he has only had recourse to more detailed drawings in describing histological sections, and the technique of these is excellent. The author discusses very fully the etiology of caries under the headings of extrinsic and intrinsic causes, but he adds little to what is already known. He places considerable importance on the influence of the race in relation to the incidence of caries and strives to show that in France it bears a relationship to the distribution of the early races. He seems, however, to lose sight of the fact that races differ considerably in their food and habits, and in that difference may possibly be found an explanation of the figures which he quotes. The book is, we consider, well worthy of perusal and does credit to its author.

LIBRARY TABLE.

An Atlas of Skiagrams Illustrating the Development of the Teeth, with Explanatory Text. By JOHNSON SYMINGTON and J. C. RANKIN. London: Longmans, Green, and Co. 1908. Price 10*s.* 6*d.* net.—This series of skiagrams is a systematic attempt to examine by means of the x rays the position and relation of the teeth at different stages of development. The skiagrams have been taken from 18 children, whose ages at death ranged from nothing (i.e., who died at birth) to 16 years, and from one adult, and the series forms a fairly complete history of the calcification of each tooth. The method adopted in investigating the specimens was to divide the head on the median plane and, as a rule, remove all the soft tissues, except the muco-periosteum of the jaws; the specimen was then placed on a photographic plate with the posterior part of the head raised about 30 degrees above the horizontal plane. By these means the shadows of the teeth at the front part of the dental arch were to a great extent avoided. The authors have by these means produced a really excellent series of skiagrams, 23 in number; each specimen is accompanied by an explanation, and in addition five drawings are added showing the maxillary sinus at different ages. An examination of the plates brings to light one or two points of interest in connexion with the calcification of the teeth. In the first place, it appears quite clear that the first permanent mandibular molar commences to calcify at an earlier period than the corresponding upper teeth and that the only portion of these teeth calcified at birth is the anterior lateral cusp of the lower tooth. Development of the permanent incisors and canines would seem to commence at an earlier period than usually stated, for the authors could detect them in skiagrams from infants four and a half months old. Another point worthy of notice is that calcification of the third permanent molar does not commence until after the ninth year and that the growth of the upper tooth is in advance of the lower one. In considering how far the results shown in these skiagrams should be taken as authoritative it must be remembered that the dental arch in all the specimens was not normal; no history as to the cause of death is given; still further the amount of material investigated is far too small. By these remarks we do not wish in any way to disparage the excellent work the authors have done, and we only hope that they will carry their investigations further and place us in possession of absolutely trustworthy data on the development and calcification of the teeth.

Handbook for Attendants on the Insane. Published by the authority of the Medico-Psychological Association. London: Baillière, Tindall, and Cox. 1908. Fifth edition. Pp. 390. Price 2*s.* 6*d.* net.—This is a new and revised edition of a widely known handbook. It has been found, according to the preface, that in certain places the training already given has developed a strong demand for some advanced teaching. The scope of the book has therefore been enlarged and we cannot but feel that it has been over enlarged. It appears to us that much that is now included in the handbook tends to make it much more than a handbook for attendants, and indeed has caused it to become a somewhat inadequate textbook. If there is, in fact, a demand for advanced teaching we think it should be met by recommending the perusal of some of the excellent manuals of morbid psychology with which the libraries of asylums are supplied, rather than by attempting to pad out a book for beginners with matter which, for its proper explanation, requires considerably more space than can, in the circumstances, be devoted to it. Many of the descriptions of symptoms given are good and the advice as to the general care and nursing of the insane is excellent, but the book, as a whole, requires more careful editing than it has received.

THE CHURCH MISSIONARY SOCIETY.—One of the special features of the great missionary exhibition, entitled "Africa and the East," which will be held at the Royal Agricultural Hall, from June 8th to July 3rd, under the auspices of the Church Missionary Society, will be a special exhibit of outfit suitable for missionaries and travellers which will be shown in a special outfit section. This section is being arranged under the auspices of Livingstone College, which is specially devoted to the study of all questions affecting the health of missionaries, and in the years 1900 and 1901 organised an important outfit exhibition at the St. Martin's Town Hall and Westminster Town Hall respectively. It is hoped on the present occasion to demonstrate the most up-to-date methods of modern outfitting for travellers in the tropics, and the leading firms who provide articles for missionary equipment are being invited to take part in this section. One of the special features of this section will be an exhibition of the various methods of protection from mosquitoes and other insects, which, it is well known, play an important part in the spread of many tropical diseases. It is often difficult to impress upon people's minds the great importance of the outfitting problem in its relation to health, and this section will, it is believed, prove of interest to many who would not ordinarily be attracted by a missionary exhibition. The organiser of this section, Dr. C. F. Harford, Principal of Livingstone College, will be pleased to communicate with any who desire particulars concerning it if they will write to him at Livingstone College, Leyton, E.

THE LANCET.

LONDON: SATURDAY, APRIL 17, 1909.

The Children Act.

A LITTLE more than a year ago we commented briefly in a leading article[1] on the general scope and aims of the Children Bill, and we then expressed the hope that so important a measure might be raised above the storms of party strife and secure speedy enactment. The instinct of parental care is so fundamental in almost all the higher forms of animal life that it might have been expected that in man, owing to the development of the altruistic sentiment, the general care of infant life and the adequate nurture and education of children would have been among the earliest matters to receive attention in a progressive civilisation. It is hardly to the credit of our sociological evolution that the collective study of child life is of such recent development, while the widespread disregard which has been shown to exist in regard to the most elementary principles of hygiene as applied to infants and children, and the wholesale loss of infant life which the mortality tables show as a result, are among the greatest stains upon our boasted progress. It is, however, gratifying to find that the general awakening to the importance of these questions in relation to the national weal has resulted in the welcome accorded by all sections of Parliament to the Bill which has now taken its place upon the Statute Book. Its provisions came into operation on April 1st, and the present is therefore an opportune moment to consider, especially in regard to their medical and hygienic aspects, some of the more important of the sections of this Act, which has not inaptly been called the Children's Charter, inasmuch as it gives greatly enlarged powers to certain authorities with mechanisms for enforcing them, and is designed with a view to ameliorate in every way possible the conditions of life in infancy and childhood.

Of the six parts into which the Act is divided the first two, those dealing with Infant Life Protection and with the Prevention of Cruelty to Children and Young Persons, are those with which we are more especially concerned. In regard to the important subject of Infant Life Protection the Act marks an advance upon the Act of that name passed in 1897, in that it renders subject to inspection *every* infant who is placed out to nurse for more than 48 hours for fee or reward, whereas the Act of 1897 only dealt with foster parents who received more than one infant under the age of five years, the age limit being also raised in the present Act to seven years. An important provision of this section is that every infant under that age who is put out to nurse for more than 48 hours must be notified by those in charge to the local authority, which is defined for the county of London as the County Council, for the City of London as the Common Council, and elsewhere as the guardians of the Poor-law Union. The foster parents must further notify these local authorities within 48 hours of any change of residence, and also of death or removal of the infant, and in the latter case must also state the name and address of the person to whom the infant has been transferred. They must also inform the coroner within 24 hours in the case of death of an infant under their care. They are not permitted to insure the life of any such child, and insurance companies are forbidden to accept any proposal for such insurance. The local authorities have the power to fix the number of infants which may be kept to nurse in any one building, and they are required to appoint one or more persons of either sex to act as "infant protection visitors," whose duties include the visiting of infants registered with the local authorities, in order to satisfy themselves as to the proper nursing and maintenance of the infants or to give advice or directions in regard to these matters. They may obtain search warrants from a justice if refused admission to any premises and can order the removal of an infant if they find the premises are overcrowded, dangerous, or insanitary, or if they find evidence of negligence, ignorance, inebriety, immorality, criminal conduct, or other similar cause.

The second part of the Act, that dealing with the prevention of cruelty to children and young persons, contains some provisions important to medical men. Among the most important is that which provides penalties for any person over the age of 16 years who has the custody, charge, or care of any child, and who either directly or indirectly assaults, illtreats, neglects, or exposes such a child in a manner to produce unnecessary suffering or injury to his health. The penalties on conviction on indictment may be a fine not exceeding £100 or imprisonment with or without hard labour for a period not exceeding two years, unless it can be shown that the person convicted was financially interested in the death of the child, when the fine may be increased up to £200 and the term of imprisonment extended to five years' penal servitude. It is specifically stated that failure to provide adequate food, clothing, medical aid, or lodging is to be deemed neglect in a manner liable to cause injury to health if the person having care of the child, being unable to provide these necessaries, fails to take steps to obtain appropriate relief from the proper authorities. A conviction under this section of the Act may be made even though actual suffering or injury to health was obviated by the action of another person. Dr. J. NIVEN, the medical officer of health of Manchester, in a report upon the Act prepared for the Infant Life Protection Committee of that city, points out the importance of the section which requires the persons, who are legally liable to maintain any child, to provide adequate medical aid, and has submitted for legal opinion the question as to whether this includes an obligation to carry out the instructions given by a medical practitioner. The reply received was that the carrying out of reasonable instructions (within the ability of the parent or guardian) would be included, in other words, a guardian of a child can not avoid his responsibility by consulting a medical man and then omitting to do as he is advised. Dr. NIVEN

[1] THE LANCET, Feb. 15th, 1908, p. 507.

points out further that this section should afford great assistance to the education authorities since it will enable them to secure that parents shall provide medical aid in those cases in which the medical inspectors or school nurses have advised that it is necessary. But it is obvious that the effects of this section, if effectively carried out, will be very widespread, for it must include not only every case of neglect, whether through ignorance or as a result of wilful and deliberate cruelty or callous indifference, but also those in which failure to secure medical aid is the result of religious belief or sectarian tenets.

This section of the Act will also prove to be of value in regard to the spread of infectious diseases. Among the poor it is said to be not uncommon where one child is affected by a disease such as measles or whooping-cough to allow other children to sleep with the infected child and to neglect all precautions to prevent spread, on the misguided idea that to suffer from the disease is inevitable, and that it is as well "to get it over." Among the very poor segregation of the sufferer must be almost impossible in the home, but deliberate exposure of a child to the risk of infection might well be regarded as an offence under this section. It is also perhaps not too much to hope that eventually the Act may assist in lessening the terrible incidence of rickets upon the children of our large towns, since the health visitors, if such be appointed, may give instruction in regard to proper feeding or compel medical treatment where the disease is established. Other matters receiving special mention in this part of the Act are those of "overlaying" and burning or scalding. In the case of an infant under three years of age being suffocated while in bed with a person over the age of 16 years, who was at the time of going to bed under the influence of drink, this shall be deemed "neglect in a manner likely to cause injury" and be punishable accordingly. If a child under the age of seven years be left in a room containing an open fire-grate not sufficiently protected, and as a consequence is burned or scalded, the person responsible is liable to a fine of £10. In this connexion, although no mention is made of the danger of inflammable flannelette, it is to be hoped that in cases of burning from this cause a similar punishment will be enforced. A special part of the Act is devoted to the question of juvenile smoking and its prevention. This during the discussion of the Bill was the cause of no little amusement. It is of subsidiary importance but is one with which we cannot but agree. In the concluding part of the Act under the heading "General and Miscellaneous" it becomes an offence, punishable with a fine not exceeding £3, to give to a child under five years of age any intoxicating liquor, except upon the order of a duly qualified medical practitioner, or in case of sickness, or apprehended sickness, or for other urgent cause. A further provision is that a local education authority may enforce the cleansing of verminous children. The remaining sections of the Act deal with reformatory and industrial schools and juvenile offenders, and are outside the scope of our present comments.

We cordially welcome the measures for the enforced care of children and infants as regards their physical and moral health and well-being, for no one sees more clearly the results upon the young of our population of ignorance and neglect than the medical practitioner, who too often finds his best efforts stultified by wanton disregard or careless performance of his instructions. In the operation of some of its measures the Act must of necessity be experimental, and it is not easy to foresee in what manner and with what results some of its provisions will be administered, though it is to be hoped that the powers conferred upon the various authorities will be exercised with tact and discretion, but without laxity, and that where experience proves that modifications are necessary these may be made as speedily and effectively as possible. The Act marks an advance in the history of our civilisation and one that future generations may regard as one of the greatest advances, since its aims are purely humanitarian and its objects the betterment of the conditions of life of our population at the most vulnerable periods.

An Ambulance Service for the Metropolis.

WE regret to see that the Home Secretary, while acknowledging the ability and value of the recent report of the Committee appointed by his department "to inquire as to the provision made for dealing with cases of accident and sudden illness occurring within the streets and public places of the metropolis," holds out no hope of any immediate action on the lines recommended. The Committee was asked to report whether any, and if so what, improvements in ambulance provision are necessary or desirable in the metropolis, and was invited to say how reforms could be best effected with due regard to efficiency and economy. Its reply was the document, a very full abstract of which appeared in THE LANCET of April 3rd, which, while it showed over and over again that a properly organised ambulance service is required in the metropolis, left the Home Office choice of two directions in which to look for a proper authority over such a service. The majority—viz., two out of three of the Commissioners, the Earl of STAMFORD and Sir KENELM DIGBY—wished to constitute the Metropolitan Asylums Board, in coöperation with the Metropolitan Police, the authority over the new ambulance service; the Minority Report signed by Sir WILLIAM COLLINS upholds the claims of the London County Council. A choice of procedure is thus laid before those who make themselves responsible for future legislation, and this further is a little complicated by the undoubted fact that the report has gone outside the terms of reference and has taken into consideration the care not only of "cases occurring within streets and public places," but also of cases occurring on private premises. By including these last cases in the purview a sound argument results for making the Metropolitan Asylums Board the authority, for undoubtedly that Board might well take charge of such cases, receiving proper payment for services rendered. On this last point there ought to be no doubt, for it would be distinctly unfair to the public that firms, for example, where the business carried on makes a certain number of accidents an absolute certainty, should be able to obtain gratuitously the ministrations of a rate-supported organisation. In our view, however, these cases upon private premises

did not come within the scope of reference of the Commissioners. When they occur they can be dealt with by medical men engaged in private practice in the ordinary manner, and if thought necessary by such medical men the ambulances of the Metropolitan Asylums Board can be obtained on payment and the patients taken home or to hospitals as the case may be. With the exclusion of these cases the particular fitness of the Metropolitan Asylums Board to act as an authority for a new ambulance service for the metropolis seems to us largely to disappear and the question resolves itself into one between the police and the London County Council.

Sir WILLIAM COLLINS, in arguments which we have set out in our abstract of his memorandum added to the report, makes out a good case for the London County Council, and we are so far in accord with his view that we consider that the relieving of the police of duties so remote from their usual functions as the transportation of invalid and sick persons must commend itself to the framers of any legislation for many practical purposes. Moreover, we presume that the London County Council ambulance service would be worked by efficient and exactly trained attendants whose assistance in many cases might be more valuable than that usually afforded under the heading of "first-aid." On the other hand, we cannot fail to see that there is much to be said for the police undertaking the duty because it is, in the words of the report, "the police who have the first responsibility for the safety of the patient on the happening of the casualty," so that if the police do not have the responsibility throughout it must be divided somewhere with risks of friction or inefficiency. Omitting the Metropolitan Asylums Board from our consideration, we wonder whether it will be possible for the police and the London County Council to coöperate in some satisfactory manner, and it is in this direction that we should almost anticipate a working plan were it not a direction which the able Commissioners have not taken. To medical men, however, the great thing is action in some direction. Probably under any of the three authorities suggested, or under any of the four possible combinations of them, a sound scheme could be devised which would remove from the metropolis a reproach under which it now lies. We hope that temporary pressure in Mr. GLADSTONE'S department will not result in any long shelving of a matter of vital interest to the public.

The Pathology of Epilepsy.

THE clinical phenomena in association with epilepsy are universally recognised, but the pathology of the disease has not yet been satisfactorily explained. There are no gross lesions to be found in the brain after death from epilepsy and the microscopical changes cannot be said to be characteristic. It has been assumed by some observers that injury to the neurons occurs or that there is some alteration in the chemical constitution of the grey matter; as a result sudden liberation of nerve energy in the grey matter of the cerebral cortex takes place without being excited by the normal stimulus. Sir WILLIAM GOWERS has suggested that the liberation of nervous energy involves the escape of some atoms of the nerve tissue which are at once replaced from the plasma adjacent to them under the mysterious nutritional influence of life. "The rearrangement is the same and yet not quite the same." It differs in just the degree and character to make the same release of nerve energy more easy; it is this recurring tendency he maintains that constitutes the disease. Regarded from this point of view epilepsy must practically be set down as a functional affection. In the Goulstonian lectures delivered before the Royal College of Physicians of London, which have been fully reported in our columns,[1] Dr. A. E. RUSSELL brings forward some able arguments in attempting to show that the pathological condition which gives rise to epilepsy is anæmia of the brain. Others have suggested cerebral anæmia as the pathological factor in epilepsy, but in these lectures the full facts supporting this theory are fully and clearly set forth. Dr. RUSSELL'S remarks are characterised by lucidity and thoughtfulness and are worthy of close attention and study.

The title selected for the lectures was "Some Disorders of the Cerebral Circulation and their Clinical Manifestations." Dr. RUSSELL first drew attention to syncopal attacks which may ensue when there is a diminution in the volume of blood passing through the brain. He pointed out that a sudden depression of the normal vaso-motor tone in the splanchnic area leads to a rapid accumulation of blood in the capacious vessels of that region; if only momentary in duration the result is merely the sudden sinking sensation experienced at the pit of the stomach, so common after any unexpected noise or fright. If of longer duration this preliminary sensation or aura is succeeded by a faint. He next proceeded to describe a type of attack in which vagal and vaso-motor symptoms are prominent and in which consciousness, though modified, is not of necessity lost. These cases exhibit obvious changes both in the cardiac and systemic systems, and vaso-dilatation in the splanchnic area is almost beyond dispute in many of these instances. Occasionally a fainting fit is preceded by definite subjective sensations or auræ, and the lecturer quoted Sir WILLIAM GOWERS, who has recorded cases in which repeated syncopal attacks passed into epilepsy. In some attacks of syncope there is marked cardiac and vascular instability with the development of a series of symptoms depending on these cardiac and vaso-motor changes; and many of these symptoms are identical with epileptic auræ, though more prolonged. The degree of consciousness preserved by the patients also varies; in some it is only modified, in others it may almost vanish, and in others complete unconsciousness may develop. The next step in Dr. RUSSELL'S arguments was the production of evidence to show the occurrence of cardiac arrest in idiopathic epilepsy. He referred to a case which he himself had observed in which at the commencement of an epileptic attack there was a temporary arrest of the heart's action, and other similar instances have been recorded. The cardiac arrest may, he submitted, be due to vagus inhibition of the heart and may be brought about by a widespread vaso-constriction. There is no doubt, he holds, that in epilepsy the vaso-motor system is unstable and an irregular pulse is frequently

[1] THE LANCET, April 3rd and 10th, and p. 1093 of the present issue.

met with in epileptic patients. Having shown that there is evidence in favour of a derangement of the cerebral circulation at the time of an epileptic fit, Dr. RUSSELL maintained that this circulatory failure offers a more reasonable explanation of the phenomena of the disease than any hypothesis yet brought forward. He reminded his hearers that a partial cerebral anæmia has been demonstrated by Dr. LEONARD HILL to be capable of giving rise to the symptoms of an epileptic aura; also that in the condition of heart block, in proportion as the period of cardiac asystole increases, varying degrees of cardiac failure manifest themselves, producing transient unconsciousness indistinguishable from that of *petit mal*, or attacks with very temporary spasm, or finally definite epileptic fits. Dr. RUSSELL also supported his contentions by a brief consideration of uræmia. In this condition the blood pressure is considerably raised and the intracranial pressure is necessarily high. Working against this strain the heart may fail rapidly in chronic nephritis. Should this occur, or should the vaso-motor centre fail rapidly, it is clear that the cerebral circulation must also be affected and a state of anæmia be produced. Hence there is much force in Dr. RUSSELL'S contention that the pathology of the cerebral manifestations of uræmia is to be sought in disturbances of the circulation through the brain. Finally, the lecturer quoted Dr. F. W. MOTT, who has shown that the essential changes in the brain in cases of status epilepticus are (1) great venous congestion and stasis; and (2) œdema of the brain and marked distension of the perivascular lymphatics with flattening of the convolutions and increased vascularity visible to the naked eye. Inasmuch, however, as the brain is contained in a closed cavity, venous stasis and œdema must be associated with a corresponding arterio-capillary anæmia.

It will be seen that in his lectures Dr. RUSSELL maintained that the fundamental factor underlying both the ordinary faint and the epileptic fit is cerebral anæmia. He also stated that the difference between the two is one of degree rather than of kind. Dr. LEONARD HILL, however, has pointed out that no evidence has been forthcoming of any independent change pointing to the existence of any vaso-motor nerves supplying the brain. Dr. HILL states[2] that no positive proof of vaso-motor changes in the brain has appeared on stimulation of the vaso-motor centre, the central end of the spinal cord after division of the cord in the upper dorsal region, or on stimulation of the stellate ganglion. Further, he holds that no conclusive evidence has been produced of the existence of any local vaso-motor mechanism such as might be called nto play by the injection of drugs into the cerebral circulation. Upon the knowledge hitherto accepted of the physiology of the cerebral circulation it would seem to follow from these considerations that the cause of fainting as well as of the epileptic fit lies outside the brain. With the fainting fit there is no difficulty in admitting the supposition, but with the epileptic fit there is naturally some hesitation in at once accepting circulatory disturbances commencing outside the brain as the true pathology of epilepsy.

[2] Sir T. Clifford Allbutt's System of Medicine, vol. viii., p. 246.

As an answer to this objection it is worthy of note that Dr. RUSSELL mentions the fact that a copious network of nerve fibres to the cerebral blood-vessels has recently been demonstrated. From a histological point of view this is valuable testimony in favour of his suggestions, and if physiological proof is also forthcoming the objection we have raised is weakened. There is another point, however, which he did not refer to—namely, the effect of drugs on the course of epilepsy. One of the most useful remedies in preventing the onset of the attacks is bromide of potassium. The main action of this drug is to allay excitability and irritability, but in persons under the influence of the drug venous stasis is liable to occur, probably due to the weakened condition of the heart, and perhaps also to an impaired tone of the vaso-constrictor nerves. Relaxation of the arterioles would allow more than the normal quantity of the blood to remain in the mesenteric and cutaneous vessels and would thus aid in the production of anæmia of the brain—the very condition it is desired to combat, according to the circulatory theory of the production of epilepsy. We shall look forward with interest to the further developments of the views so admirably laid down by Dr. RUSSELL. We congratulate him on having given to the profession a most useful course of lectures. In so doing he has upheld the wisdom of Dr. GOULSTON in founding the lectureship which he directed should be allotted annually to one of the "four youngest doctors in physic" of the College. The original work accomplished by those nominated to give the lectures each year has proved valuable to the progress of medicine, and the lectures delivered this year are worthy successors of those that have preceded them.

Annotations.

"Ne quid nimis."

THE RISKS OF THE LOCAL INOCULATION OF TUBERCULOSIS.

THE importance of the danger of the dissemination of tubercle bacilli by means of the sputum is known not only to the medical profession but also to the public, but it is not sufficiently appreciated that the saliva is also a possible medium of contamination. It is not only possible, but certain, that the saliva of patients affected with pulmonary tuberculosis is capable of conveying the disease, and on another page of this week's issue of THE LANCET is published an important paper on this point by Dr. Newman Neild and Dr. E. V. Dunkley. They show, in the first place, that in a large proportion of cases of phthisis tubercle bacilli can be found in the saliva, especially shortly after expectoration. In the second place, they were able to demonstrate by examining bacteriologically the flaps of envelopes which had been fastened by consumptives that in one case out of two tested tubercle bacilli could be found. Saliva plays an important part in the practical life of many people. It is looked upon as a providential arrangement for the provision of small quantities of liquid whenever required, and its ready availability has no doubt much to do with the extent of its employment. With saliva most people affix stamps to letters, even if from doubt of the cleanliness of the gum of the stamp, or from dislike of its taste, the letter is licked and not the stamp. Envelopes with embossed

stamps on them save this necessity, but the envelope flap has still to be moistened and the tongue is the appliance usually employed. Moisture certainly favours the marking powers of a lead pencil, and here again the saliva is called into use. To turn over the leaves of a book moist fingers are found to be effective by not few uncleanly and barbarous persons, and the mouth is usually the readiest source of moisture. Should someone else use that pencil or that book the risk of the conveyance of micro-organisms from the first user to the second is by no means small. It will be remembered that in the "Arabian Nights" the contamination of the moistened fingers employed to turn over the leaves of a book is employed to poison an unjust king, and perhaps the episode was set down for our instruction—to warn us against a nasty trick. A school slate is happily becoming a thing of the past for several reasons, but the facility with which the tongue of the child served to erase the writing on the slate was very liable to lead to infection. Lastly, saliva is frequently employed for what may be euphemistically termed ablution, and though the practice is mainly prevalent amongst the lower classes, yet it is not unknown elsewhere, and as the victims are generally children there is little doubt that such ablution is widely used by nursemaids on the children they have to tend. Several other equally objectionable methods of employment are mentioned in the paper to which we have referred, and the conclusion at which we must arrive is that the use of saliva for anything else than for its digestive functions is very likely to disseminate disease. This *a priori* opinion is fully supported by a large amount of evidence of actual inoculation of tubercle by the saliva of phthisical persons. In some cases the patient inoculates himself, as when a woman with consumption applied her saliva to an irritating eruption on the arm, and at the site arose some lupus nodules. In such a case as this inoculation is especially likely, for the soil is suitable for the growth of the tubercle bacillus. In most of the cases, however, the patient is inoculated by means of the saliva of someone else. In piercing the lobule of the ear so as to permit the wearing of earrings the saliva of the operator is often employed to lubricate the needle, and from this source or from the use of the saliva as a styptic the appearance of a tuberculous nodule at the opening made is not very rare. In the performance of ritual circumcision it was the custom not long ago for the operator to stay the bleeding by sucking the wound, and though the practice is given up by the more educated mohelim, yet the primitive method is highly appreciated by a section of the Polish Jews. This practice has in many cases given rise to a local inoculation of tuberculosis. In some cases a tuberculous ulcer has appeared on the prepuce and in others the inguinal lymphatic glands have broken down. The objectionable procedure giving rise to these unfortunate cases is certainly less prevalent than formerly and it is to be hoped that it will die out entirely as the general level of education rises. Another mode of infection through the saliva of a tuberculous person is to be found in tattooing. Apart from mere sepsis, syphilis is the most frequent form of specific infection resulting from tattooing, but tuberculosis also occurs. Jadassohn's case is typical. A healthy woman, aged 30 years, was tattooed on the forearm by a consumptive man who afterwards died from phthisis. The Indian ink used for the tattooing was moistened with the man's saliva and typical lupus nodules developed on the tattooed patches. In tattooing the needles are often also moistened with saliva. It is clear that however convenient it may be to employ saliva for these manifold uses it is eminently desirable that such practices should cease, for they have been proved to be the means of conveying infectious disease in many instances, and we are fully justified in thinking that infection occurs by this channel in many cases in which no suspicion of it arises. The practice of licking stamps and envelopes should be done away with. When sealing a letter with wax was considered to be the correct method it was looked upon by many as an insult to have a letter fastened by a wafer sent to them, for as it was on one occasion somewhat crudely expressed, "Why should this man send me his spittle?" To say the very least of it, the promiscuous use of saliva is wanting in refinement, and, as the paper by Dr. Neild and Dr. Dunkley has shown, it is wanting in sense, for it introduces a quite unnecessary risk of microbic infection into our daily intercourse.

SPRING CLEANING.

SPRING-CLEANING, especially when certain simple precautions in carrying it out are not observed, is not without its obvious possibilities for evil. The cardinal fact connected with this procedure is that there must always be potentialities for evil lurking in dust and dirt, and a general house cleaning means the removal of these deposits which usually represent the sum of a year's accumulation. It would be strange indeed if this accumulation was free from disease-producing organisms, and it never is. Bacteriological examination would be bound to reveal a rich garden of pathogenic entities in the household dust and dirt annually removed in the spring cleaning process. It follows that only that method of spring cleaning can be approved which secures the removal of the dust and dirt as against one which merely scatters them. Spring cleaning, after all, amounts to the application of aseptic principles to the dwelling-house, and modern refinements teach that unless the process is well done it might as well be left undone. The accumulation of dirt in a house is repugnant to sanitary ideas, but the process of cleaning should not be an annual ceremony but one carried out at more frequent intervals. Few householders, however, would find it convenient, we imagine, to submit the house to a kind of aseptic process more than once a year, and yet the fact that it is commonly done only once means that an accumulation of some depth and intensity has to be dealt with. Theoretically, no materials that may probably contain dormant disease-producing entities should be allowed to accumulate their forces, and therefore spring cleaning as an annual aseptic process applied to the house is wrong in principle. According to this view spring cleaning should be abolished in favour of a regularly conducted cleaning process kept up all the year round at comparatively short intervals. This is the course pursued by many careful citizens nowadays and the public would do well to follow their example.

ECLAMPSIA OR CEREBRAL HÆMORRHAGE.

THE occurrence of convulsions in pregnancy due to eclampsia is so much more common than any other variety of convulsive seizure that the practitioner is tempted to diagnose eclampsia at once in any case in which a pregnant woman has a fit. When we recall the fact that cerebral hæmorrhage occasionally complicates cases of eclampsia it is not surprising to find that the diagnosis between these two conditions may present great difficulties. Small meningeal hæmorrhages are, of course, not uncommon in cases of eclampsia and are usually attributed to the rise of blood pressure produced by the fits, and in accordance with this view they are most frequent in cases where a large number of convulsions have occurred. Cases of the apoplectiform eclampsia of the older writers characterised by large hæmorrhages into the brain substance are by no means so common, but do occur from time to time, and by masking to a large extent the symptoms and physical signs due to the eclamptic condition may render a certain

diagnosis impossible. Dr. Alan Randle records a case in the present issue of THE LANCET, p. 1111, which is a good illustration of this difficulty. The patient, 43 years of age, a multipara six months pregnant, was thought to be suffering from eclampsia, but at the post-mortem examination was found to have a large cerebral hæmorrhage filling both ventricles and extending to the medulla, the patient dying from respiratory failure. The urine contained a considerable quantity of albumin, but there was no paralysis or true anæsthesia. The kidneys were of the red granular type, the liver was congested, and the heart was hypertrophied. The patient had suffered from lassitude and headache for ten days, but there was no history pointing to any previous renal trouble and there was no œdema. She was confined of a six months' partly macerated fœtus, and as the condition improved after her delivery the diagnosis of eclampsia was thought to be confirmed. It is very probable that not a few of the cases of so-called eclampsia without fits may in reality be instances of cerebral hæmorrhage simulating eclampsia. Among the more striking features, as N. C. Carver and J. S. Fairburn have pointed out,[1] in cases where eclampsia is complicated by severe cerebral hæmorrhage, especially when it involves the pons, is the youth of the patients, the absence of any fit, or the occurrence of only one or two followed by the onset of deep coma with respiratory stertor and in many cases Cheyne-Stokes breathing. A correct diagnosis is of the utmost importance if an accurate prognosis is to be made, but only too often the cerebral hæmorrhage is only discovered at a post-mortem examination, and in such cases the question as to whether the case is one of pure cerebral hæmorrhage or cerebral hæmorrhage complicating eclampsia will depend on the discovery of the characteristic lesions of eclampsia in the kidneys and the liver. Luckily, cases of extensive cerebral hæmorrhages, contrary to the general opinion, are in reality rare in eclampsia; thus in 216 cases collected by various writers in only seven did there appear to have been any large cerebral hæmorrhage. In an attempt to arrive at a correct diagnosis of eclampsia in a comatose patient stress must be laid on the previous history, the age of the patient, usually a youthful primipara, the discovery of a large quantity of albumin in the urine, the presence of œdema, the absence of hemiplegia or rigidity in the limbs of one side, and the occurrence of repeated convulsions. It is obvious that where a large area of the brain substance is destroyed by the hæmorrhage the diagnosis, as in Dr. Randle's case, may present almost insuperable difficulties, and it must be borne in mind that in some cases of hæmorrhages into the pons convulsions are not uncommon.

OVERCROWDING ON THE DISTRICT RAILWAY.

IT is a commonly expressed opinion that what are called facilities for locomotion lessen overcrowding both in the conveyances themselves and in the streets. As a matter of fact, the exact opposite seems to be the case as regards London. The discomfort and in some cases the dangers of overcrowding trains and the like have of recent years become notorious, and it cannot be wondered that numerous questions are asked in Parliament on the matter. On April 6th various members of the Labour Party attacked the Metropolitan District Railway Company on account of overcrowding. Mr. C. W. Bowerman pointed out that the overcrowding took place at morning and night, which is an undoubted fact. Mr. W. Thorne, on the other hand, argued that a great deal of the overcrowding happened in the middle of the day, because fewer carriages were run. Mr. H. J. Tennant, on behalf of the Board of Trade, promised to make representations. That overcrowding does exist is indubitable, but it is just as obvious and just as annoying upon the municipally owned tramcar as on the capitalist railway carriage. As the "thousands of working men and women," to whom Mr. W. Hudson, the Labour Member for Newcastle, referred upon the same occasion, to say nothing of a few thousand more persons to whom he would not grant the title of working man, all have to get to their work between the hours of 5 A.M. and 10 A.M., and all strive to get home between 5 P.M. and 8 P.M., we do not see how overcrowding is to be averted. The modern body politic is just as complicated as the natural body, and all these difficulties are part and parcel of modern industrialism. When the worker lived over his shop or the rich tradesman had a few apprentices who lived in the house, while the journeyman lived only a few doors away, the need for travel did not exist. But under modern conditions no one in a great city lives near his or her work. Moreover, a great part of the overcrowding is due to pleasure-seekers and the hordes of surburban dwellers who come up for "sales" and theatres. It is evident from a remark of Mr. Thorne, "Are railways run for shareholders only," that the outcry against overcrowding on railways is not solely due to anxiety in the interests of passengers, but is partly inspired by the wish for the nationalisation of railways. But the state in London of the municipally owned tramcar forms a poor argument in this direction. At present there would appear to be no remedy, although such a state of matters is both dangerous to life and injurious to health.

[1] Proceedings of the Royal Society of Medicine, vol. i., p. 90.

RUPTURE OF THE ŒSOPHAGUS.

WOUNDS and ruptures of the œsophagus are by no means common. Phthisical patients occasionally rupture the œsophagus and in inveterate alcoholics constant vomiting sometimes results in the walls giving way. Of course, also, injuries to the neck may, though they very rarely do, involve the œsophagus. What is probably an unique case of rupture by violent distension has recently occurred in Sweden, which is reported by Dr. G. Petrén, assistant in the clinic of Professor J. Borelius in the University of Lund. The patient was a vigorous, healthy man, 27 years of age, who was employed as a cleaner and working by means of compressed air conveyed through an indiarubber tube. As he wished to move he doubled up the tube with his hands and seized the end between his teeth. While doing so he slipped and lost his hold on the tube which delivered its contents at a pressure of seven atmospheres directly into his mouth. He fell down complaining of a severe pain in the chest and vomited a small quantity of mucus tinged with blood. Three hours afterwards when admitted to hospital the neck, the integuments of the thorax, and the chin were emphysematous, the pulse was small, rapid, and irregular, respiration painful, and the general aspect very bad. The pain was referred to the epigastrium. The man could not stand or lie down but had to keep a sitting posture. A few hours later the emphysema had encroached on the face, the eyelids, and the arms. The dyspnœa became more and more pronounced and the heart's action grew weaker and weaker, death occurring the next morning. At the necropsy a vertical clean rent in the œsophagus was found 6 centimetres in length, the upper extremity being 1·5 centimetres from the bifurcation of the trachea; the surrounding connective tissue was infiltrated with pus. Thus the rupture in this very special case occupied the same position as ruptures due to vomiting generally do—that is, the lower end of the œsophagus, sometimes even involving the cardia. They are generally longitudinal and present clean

edges as if cut with a knife, and they are generally situated on the posterior or lateral aspect of the œsophagus. If a diagnosis could be made sufficiently early it is quite conceivable that operative interference might prove successful.

PERIARTERITIS NODOSA.

THE obscure and rare condition known as periarteritis nodosa forms the subject of an interesting communication by Dr. Warfield T. Longcope to the February number of the *Proceedings of the Pathological Society of Philadelphia*. The patient whose case was investigated by Dr. Longcope was a coloured man, aged 35 years, admitted to the Pennsylvania Hospital under the care of Dr. James Tyson complaining of præcordial pain, dyspnœa, and œdema of the abdomen and lower extremities. His illness commenced about three weeks before admission with pains in the joints and calves of the legs, slight malaise, and weakness. The legs began to swell four days before admission and his dyspnœa increased. His temperature was 96° F., respirations 28, and pulse 56, the radial pulse being of small volume and tension, thready, and at times irregular. There was tenderness over the liver, which extended 3·5 centimetres below the costal margin. The leucocytes were found to number 13,200 per cubic millimetre. The urine contained a trace of albumin and numerous hyaline and finely and coarsely granular casts. About a fortnight later, after a temporary improvement, the urine suddenly became blood-stained and contained many granular and hyaline casts. Later the leucocyte count rose to 32,000, while the hæmoglobin was found to be 58 per cent. The patient became more dyspnœic and died about a month after admission. At the necropsy the heart was found to be enlarged and there was a marked white thickening over its vessels. Near the apex there were greyish and yellowish streaks in the muscle. The liver was enlarged and on section presented a curious coarse mottled appearance. Some of the small arteries were found to be plugged with firm red thrombi. Both kidneys showed on section a mottled appearance and it was often difficult to distinguish medulla from cortex. There were numerous small infarctions scattered through the cortex. On following up the renal blood-vessels, thrombi, red or white in character, were found in the arcuate arteries and extended as far as these could be followed. There was extensive softening of the left occipital lobe of the brain, and the left posterior cerebral artery was plugged throughout the greater part of its length by a firm red and grey thrombus. On microscopical examination changes typical of periarteritis nodosa were found in the smaller arteries of the heart, liver, kidneys, pancreas, testicles, brain, perineural connective tissues, and voluntary muscles. There were anæmic infarctions of the kidneys, foci of necrosis in the myocardium and liver, typical glomerular nephritis, and degeneration of voluntary muscles. In the larger vessels longitudinal section showed the presence of the nodules, and on approaching a nodule from a healthy portion of vessel, the first change noticed was in the adventitia where there was infiltration with small round cells, a few polymorphonuclear leucocytes and eosinophiles. A short distance from this changes were found in the intima which presented slight fibrous thickening covered with cells of various types. Somewhat nearer the nodule the media showed swelling of the muscle cells with loss of nuclei. Cross sections showed at the periphery of the nodule involvement first of the adventitia, then the intima, and, finally, more or less complete but often irregular destruction of the internal elastic layer and of the media. Some vessels showed general irregular dilatation of the vessel, others showed bulging on one side; occasionally the lumen was found to be partially occluded by proliferation and infiltration of the cells of the intima, but in other sections it was found to be plugged by a thrombus consisting of red blood corpuscles, polymorphonuclear leucocytes, fibrin, and platelets. The thrombi, like the changes in the walls of the vessels, were localised and were often confined to a very limited area. In older lesions the inflammatory changes were less prominent and the vessel wall was converted into a wide circular ring of cellular connective tissue, in the centre of which was an organising thrombus. In some such nodules no trace was to be found of the original smooth muscle of the media, or of the elastic tissue of the internal or external elastic laminæ. In the smaller vessels the lesions presented certain differences: they were usually clustered in definite lesions corresponding to the bifurcation of the arteries. The perivascular lymphatics at a distance from the nodules were distended with polymorphonuclear leucocytes and large phagocytes. The adventitia of the vessels as well as the perivascular connective tissue showed œdema and infiltration with various cells. This exudate was found to increase and some infiltration with fibrin also appeared until it formed a wide zone around the muscular ring of the media. The intima also showed infiltration with polymorphonuclear leucocytes, fibrin, and large pale cells. The fibrinous exudate in the intima sometimes increased to form a granular ring internal to the media which eventually became involved in the inflammatory process, and in the central part of all nodules it was entirely destroyed. Dr. Longcope, at the end of his valuable paper, discusses briefly the histogenesis and etiology of the disease. He points out that owing to its tendency to involve all the coats it is difficult to be certain of the primary lesion. In his own case he was able to find two instances in which the adventitia about minute arteries showed a localised infiltration with small round cells without changes in the media or the intima, and he is inclined to regard these as the beginnings of nodules. He concludes that in his own case the adventitia was the primary seat of attack, but he is not prepared to suggest that this is the rule in all cases. In regard to the etiology, no evidence was forthcoming to connect it with syphilis and no spirochætæ were demonstrated in sections prepared by the Levaditi method. By some mischance the cultures prepared from the liver and spleen were destroyed, so that no bacteriological studies could be carried out. Bombard in a recent case obtained staphylococcus albus in cultures from the liver and spleen, but with this exception the bacteriological investigation of these cases has given negative results. In spite of these failures, however, Dr. Longcope thinks that many of the features are in favour of the view that the disease is due to an acute infection, notably the fever, the leucocytosis, and the type of the inflammatory exudate. Moreover, the glomerular nephritis present in the cases of Hart and Bombard, as well as in his own case, is consistent with this view of causation by some intoxication or unknown infective agent.

EPSOM COLLEGE AND A BEQUEST.

THE will of the late Surgeon-General Richard Chapman Lofthouse, A.M.S., which consisted of a formal will and five documents explaining the testator's wishes, was considered in the High Court of Justice, Chancery Division, on March 17th and 18th. Although the testator declared that his trustees should, if possible, avoid taking any law proceedings in regard to the construction of and the carrying out of the trusts of his will, and that they should be guided in the application of the residue as much by the terms in the will set forth as by written instructions which he intended to deposit therewith, it was found to be necessary for the court to decide various points, and to discriminate between conditions which were essential and those which

were directory only and not of the essence of the gift, that is to say, to determine which conditions were not precedent to the gift taking effect. Judgment was reserved on the conclusion of the hearing of the summons, and Mr. Justice Swinfen Eady delivered a written judgment on April 7th. The testator estimated the amount of the residue at £15,000, but the actual amount proved to be about £40,000. The will provides that an annuity of £100 is to be paid to the testator's sister, Mrs. Mary Ann Stirk; that during her lifetime the residue of the income of the trust is to accumulate and be invested; and that after her death the whole estate is to be realised and devoted to charitable purposes. Various carefully thought out projects and alternative schemes were provided for, but it is unnecessary to refer to these in detail since the court has decided that the first object mentioned in the will is the proper one to be carried out. Therefore the vicar and churchwardens of St. Mary's, Low Harrogate, are to receive the gift, the details of which are as follows: That the trustees are "to pay and apply such sum or sums of money after the death of the said Mary Ann Stirk in the erection of a church with entirely free seats, monument-chapel, and if means permit of a school house, in connexion with the Established Church of England, and also a sum of £1000 towards the endowment of such church (according to the written instructions given), provided the remainder required by the Bishop of the diocese for the endowment of the said church be found or contributed by the Ecclesiastical Commissioners or other Church association within a reasonable time." Any surplus up to £3000 that remains after carrying out the scheme mentioned above is to be equally divided between four charities in Harrogate—namely, the Bath Hospital, the Convalescent Hospital, the Home for Incurables, and the Cottage Hospital; and if a further sum of £1000 remains it is to be paid to the pension fund of Epsom College. The important question was raised whether the accumulations of income might now be stopped, notwithstanding that the testator's sister, Mrs. Mary Ann Stirk, is still living. As this lady objects to such a course being followed, on the ground that if she lives beyond 21 years from the testator's death, she, as sole heiress-at-law and next of kin, may become entitled thenceforward during the residue of her life to the income of the estate, no immediate application and division of the residuary estate can be made. Moreover, the amount which the Epsom College Pension Fund may receive is dependent upon the amount of the ultimate surplus, which in turn may depend upon the length of time during which the income of the trust fund is allowed to accumulate. The accumulation is, therefore, to be continued during the life of Mrs. Mary Ann Stirk, or until further order, not to exceed a period of 21 years from the testator's death.

THE LATE SIR DONALD CURRIE AND MEDICAL EDUCATION.

IT is with great regret that we have learned the death of Sir Donald Currie which took place at Sidmouth on April 13th. Sir Donald Currie was a man well known in the shipping world as the head of the Union Castle Line, while he for many years represented West Perthshire in the House of Commons. With his career as merchant and politician the world has been made very familiar by many excellent obituary notices in the press, but we wish here to lay stress on the fact that he was one of those philanthropists who, working unostentatiously, furthered many schemes for the welfare of his fellow creatures. Of late years he had interested himself in the needs of the Universities of Edinburgh and Belfast, and a little more than five years ago lent his support to the movement which has resulted in the incorporation of University College, London, in the reorganised University of London. To carry out this scheme it was necessary to find funds for the erection of a school of final medical studies in connexion with University College Hospital, and for this purpose Sir Donald Currie gave a sum of £80,000. As if this act of generosity was not sufficient, he further added a sum of £20,000 for the erection of a nurses' home and a maternity students' house in connexion with the same institution, and gracefully added a further sum of £2500 as a gift from his daughters to furnish the latter buildings. When we consider the straitened circumstances into which medical education in London has fallen, such generosity deserves from our profession the warmest thanks and approval. Sir Donald Currie, though well aware of the necessity for rich men to give of their wealth towards the maintenance of the hospitals of London and elsewhere, a duty to which he again and again responded, was none the less keenly alive to the necessity for providing support for the medical schools of the metropolis—institutions the maintenance of which is so important to the public at large. Though, as he stated in public, there was some reason to hesitate to provide funds for hospitals, because in his opinion these should receive support from the rates, there could be none when the needs of the medical schools were considered. He looked upon these as technical institutes of the greatest importance to the capital of the Empire, and in the absence of Government subventions he felt it was the duty of those who could give help to do so. As might be expected, holding these views, he was keenly alive to the necessity for supporting movements which had as their object the advancement of medical knowledge; the problems of disease, no less than high finance and politics, were readily grasped by his acute intellect and at once secured his sympathy and practical support. To him the present state of medical education in this country was a matter of serious import, and he hoped that the time would soon come when the medical teachers, like those of any other department of learning, would receive adequate endowment. His munificent gift for the purpose of the advancement of the interests of the University of London was a practical expression of his cherished views. To him it seemed a remarkable state of affairs that whilst on the continent medical studies receive the support of the various Governments, whether monarchical or democratic, and in America almost fabulous endowment at the hands of its enlightened rich, in London, with its unequalled opportunities for the investigation of disease, medical studies were cramped, and the hospital and medical school teachers were exploited in the interests of the public at large by a system which left the support of teachers and schools to the chance patronage of a comparatively few medical students.

CONGENITAL MALARIA.

THE possibility of the transmission of malaria to the fœtus in utero is a subject of discussion. The parasite has been found in the blood of the new-born on several occasions, but sufficient time had elapsed for post-natal infection. Hitte has described malarial parasites in the blood of the umbilical cord in two cases, but in the article on Malaria in Allbutt and Rolleston's "System of Medicine" Professor W. S. Thayer pronounces the evidence unconvincing. At a meeting of the Société Médicale des Hôpitaux of Paris on Feb. 5th M. Dumolard and M. Viallet reported the following case, which seems to put beyond doubt the possibility of congenital infection. A married woman, aged 31 years, was admitted into the civil hospital of Mustapha, Algiers, on August 12th, 1908. She had three healthy children and was in the seventh month of pregnancy. She lived in a malarious region but had always

enjoyed good health until four days before admission, when she became feverish. After four hours the attack ended with abundant perspiration. On each of the following days a similar attack occurred. On examination on the 13th she was free from fever but was very anæmic and showed a slight subicteric tint which was due to hæmolysis, for the urine did not contain any bile. The spleen was markedly enlarged. The red blood corpuscles contained numerous non-pigmented hæmatozoa. On the morning of the 14th another attack occurred. 20 centigrammes of hydrochlorate of quinine were given hypodermically every two hours. On the 15th labour came on and a well-formed living male child weighing five pounds was born. It lived only an hour. Blood from the umbilical cord, the heart of the fœtus, and the placenta showed hæmatozoa like those found in the mother's blood. Quinine was not given on this day, and on the morning of the 16th a very grave attack of fever accompanied by stupor occurred. Three injections of 50 centigrammes of quinine were given on this day. On the 17th there was slight improvement and 20 centigrammes of quinine were given every two hours. On the 18th there was manifest improvement and 150 centigrammes of quinine were given and on the 19th the dose was reduced to 100 centigrammes. On the 20th there were no parasites in the blood and no quinine was given. An abscess formed on the abdomen at the site of the hypodermic punctures and was opened on the 30th. On Sept. 3rd there was phlebitis of the left leg with fever, pain, and œdema, but the uterus showed nothing abnormal and the general condition remained good. Recovery followed. M. Dumolard and M. Viallet considered that this case proves the possibility of the transmission of the malarial parasite across the placenta to the fœtus, for there was no uterine hæmorrhage by which the infection could have been conveyed. The question of the frequency of such transmission remains to be determined. As in other infections, the health of the mother, the virulence of the infection, the age of the fœtus, and alterations in the placenta, no doubt are factors. Many cases have been published to show that even in severe malaria the fœtus is not infected, but its health is often impaired. Probably when it escapes the hæmatozoon itself the toxins filter across the placenta. Another question is the relation of malaria to abortion. Malaria must be regarded as a powerful cause of abortion, which is more likely to occur when, as in the present case, the fœtus is infected. But apart from fœtal infection the destruction of the red corpuscles and the fever in the mother may produce abortion. It follows that a pregnant woman suffering from malaria should be given quinine in sufficient doses. No doubt in exceptional cases quinine excites uterine contractions and produces abortion, but it is the only means of saving the mother and the fœtus from an infection likely to produce abortion and then kill the mother. In the case reported above the infection of the fœtus showed that quinine was doubly indicated.

THE SYSTEMATIC DISINFECTION OF SCHOOL FLOORS.

AN interesting series of experiments indicating the value and importance of disinfecting school floors appears in a report made at the instance of the Buckinghamshire Education Committee by its staff science master, Mr. W. E. Marsh, B.Sc. During the six months from Jan. 1st to June 30th, 1907, the official returns showed that 43 schools were closed owing to epidemics in the county for an aggregate of 137½ weeks, involving a loss of 197,700 attendances. Although these results do not affect the Board of Education grant, as provision is made to allow for such cases, they mean a serious educational loss to the scholars and a waste of time to the teachers. In addition, of course, there is often some loss of life. Thus in a recent epidemic of diphtheria six deaths occurred amongst children in one village, four of whom were attending one school, and in another case no less than 16 children died from the same disease. As Mr. Marsh points out, it is difficult to trace accurately the effect of an epidemic in those cases where it is not severe enough to cause the closure of the school, but there is generally a very considerable drop in the attendances before it is decided to close the school for an epidemic, and in this case there is actual loss of grant to the school. In an instance quoted the grant lost has been estimated to be £80 over a period of six weeks before closing and six weeks following the reopening. In the same way the attendances take some time to regain their normal condition. In Mr. Marsh's preliminary experiments two rooms of similar size, shape, and having about the same number of scholars in each were selected. In one case the floor was sprinkled with plain water (1 gallon to each 400 square feet) and in the other with cyllin solution (1 in 350) in the same proportion. The rooms were left for half an hour and were then swept. Samples of the dust were collected and bacteriologically examined, with the result that an average reduction of from 75 to 85 per cent. of organisms was shown in the dust treated with disinfectant. It was also proved that the organisms in the air were considerably reduced by the disinfection of the floor. Later the Buckinghamshire Education Committee authorised the extension of the experiments, the results of which have been presented by Mr. Marsh in two reports. They show that the spraying was commenced in the first week of February, 1908, and was continued for 12 months. The floors of 24 schools were thoroughly sprinkled each day immediately after dismissal of the children in the afternoon. Each of these schools was paired with a school of the same type in the same district (sometimes in the same town or village) and, as far as could be arranged, with about the same number of children in attendance, so as to be reasonably certain that any abnormal cause of variation in attendance, such as inclement weather, should as far as possible affect both disinfected and non-disinfected schools equally. The result showed for the whole year an increased attendance of 0·76 per cent. at the disinfected schools. This may seem small, but, as Mr. Marsh observes, the difficulty of raising the attendance of course increases rapidly as the percentage approaches the maximum. The foregoing result, he adds, is equivalent to an increase of grant in the county of Bucks of about £500 per annum. The experiments in conclusion appear to Mr. Marsh to teach that the following advantages may be gained by the aseptic treatment of the school floor: (1) the better health of the scholars and teachers; (2) the probability that attacks of infectious diseases would be reduced in number and virulence; (3) the educational gain due to the greater continuity of the instruction following the more regular attendance of the scholars; and (4) the reduction in the cost of elementary education to the ratepayers owing to the increased grant being in excess of the cost of the process of disinfection.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE series of museum demonstrations at the Royal College of Surgeons of England will be brought to a close for the present session by the series which commences on April 23rd, when Professor A. Keith will show and explain the collection of specimens which illustrate malformations of the face, nose, mouth, pharynx, and neck. The demonstrations are given in the theatre of the College, Lincoln's Inn-fields, at 5 o'clock, the first on April 23rd, the second on April 30th, and the last on May 7th. Mr. R. J. Godlee has added to the College collection his series of specimens illustrating the

peculiar formation on the palate described as the torus palatinus.

THE annual discussion of the Hunterian Society will be on Diseases of the Thyroid Gland with special reference to Exophthalmic Goitre. It will be opened on Wednesday, April 21st, at 8.30 P.M., by Professor G. R. Murray of Manchester. The discussion will be resumed on Wednesday, April 28th, when Sir Victor Horsley and Mr. James Berry will deal with the surgical aspects of the question. All members of the medical profession are invited to attend.

WE regret to announce the death, at 10, Stratford-place, after a long illness, of Louisa, wife of Sir T. Lauder Brunton. Sir T. Lauder Brunton's many friends will sympathise with him deeply upon his loss. A memorial service will be held at St. Peter's, Vere-street, W., on Saturday at 10.30 A.M., conducted by the Very Rev. the Dean of Salisbury.

A TELEGRAM from the Governor of Hong-Kong to the Secretary of State for the Colonies states that 6 cases of plague were reported during the week ending April 3rd, the number of deaths being five.

THE ROYAL COMMISSION ON THE POOR-LAWS AND RELIEF OF DISTRESS.

VII.[1]

IN CONCLUSION.

IF the reports issued by the Majority and the Minority of the members of the Royal Commission on the Poor-laws lead to no immediate legislative results upon a large scale they have beyond doubt achieved a great work by rousing public feeling. The evils are mostly of very old standing and have been greatly produced or aggravated by popular ignorance or neglect of everything connected with the physiology of education, with the preservation of health, and with the prevention of disease. There is now some prospect that these matters will receive attention and that the extent to which certain strata of our fellow countrymen have become demoralised by dirt and disease will before long be regarded as a national evil for which effective remedies must be sought. Such remedies will be found, we think, mainly in two directions: in a public health service of constantly increasing efficiency, appealing to all sections of the public by precepts, by examples, and by results; and in a gradual tightening up of the law as rapidly as growing public opinion will permit, so as to enable the cases of all gross offenders against sanitary requirements to be dealt with effectively. Parents who leave their children without proper food or clothing are now punishable in our courts, and those who neglect to keep them in a proper state of cleanliness should be punished in a similar manner. The law cannot profitably outstrip public knowledge and public opinion, but it may profitably keep just a step in advance of both and thus lead to their gradual improvement. Nothing useful was ever born full-grown, and no attempt at revolutionising the operations of the Poor-law by a stroke of the pen, or by a single Act of Parliament, is likely to be successful. The reports have, however, served the good purpose of directing attention to many evils for which remedies are required and will probably lead to legislation under which a course of gradual reform may be commenced without delay, and may ultimately be carried to its legitimate termination. We are unable to accept either of these reports in its entirety, but we welcome the light which they throw upon the actual state and conditions of problems which statesmen should feel it an imperative duty to solve. Perhaps the chief thing now to be feared is lest the conflicting advice of discordant counsellors should be employed as an excuse for complete inaction.

To carry one of the reports into effect or to frame legislation based upon selected portions of them, which would cover the whole ground with which they are concerned, would, indeed, form a task before which the most courageous Cabinet, occupied with other questions of foreign and domestic policy, might pause and ponder. Some day perhaps a set of statutes, in themselves a volume of no mean dimensions, together with their supplementary rules framed by departments and having the force of law, may form a monument to the industry of the Commissioners and preserve as the law of the land selected and approved excerpts from their recommendations. A single Act will, almost obviously, not suffice to contain the abolition of the boards of guardians, condemned by both reports, and the appointment of their substitutes together with, for examples, whatever courses may be prescribed for the diminution of casual labour, and the relief of temporary distress in the cycles of unemployment, of which the reports take cognisance.

The reports of the two sets of Commissioners, as we have shown in these articles, have common features, as well as points of difference; each has been framed in the public service and with a view to that service by honourable and able men and women, and it is probable that such legislation as may take place will, as we have suggested, be of a selective character. One point at which the two reports are at marked variance is the question of what controlling authority is to direct in the future "Public Assistance," the relief, aid, and guidance of the poor, whom we shall have with us always, however they may be classified, and in spite of such success as we may meet in our efforts to check the augmentation of their ranks. It may be possible to establish the Public Assistance authority upon lines suggested by the majority and yet not to adopt the Majority's recommendations as to the manner in which under that authority medical assistance, for example, is to be supplied to the poor. Or it may be thought advisable to give weight to the "Public Assistance" proposals of the Majority and yet to aim at the abolition of casual labour and unemployment upon lines suggested by the Minority in an extremely convincing manner. The question how the task is to be performed of sifting out the more desirable elements in the two reports, and of combining them in a homogeneous whole, or in a series of homogeneous wholes, is one as to which it is difficult to offer suggestions. No one can forecast the reply which time may bring and which must to some extent depend upon political developments wholly disconnected from the Poor-law and those who administer it. The Minister who at some future date grapples with the task set him by the Commission will have to be one of exceptional attainments, and if he carries it out with any degree of success will enhance his reputation thereby.

Whatever delay may occur, however, and whoever the statesman or statesmen may be who will take the first steps towards initiating a new order of things, the direction in which the first movement will be made seems fairly clear. Due weight will no doubt be given to the memorandum in which Dr. Downes expresses his doubt as to the expediency of disturbing existing conditions, and care will be exercised lest the change should produce an interval of confusion and disorganisation, but it seems inevitable that the area of the administration of Poor-law relief (to be administered under some new name) will be greatly increased and that the elective council ordering the local affairs of the area, whatever it may be, will supply in some shape or form the governing authority. The Majority recommend that this should take the form of a new body, chosen upon lines of a novel character, not consistent with modern tendencies towards representation and public election, but having advantages which can readily be appreciated, of independence, continuity, and expert knowledge. The Minority would utilise existing committees of councils, dividing among them the tasks to be performed. Of these two courses, which are not incapable of being combined to some extent, that recommended by the Minority has in favour of its chances of ultimate adoption the natural desire not to increase the number of local bodies, and the fact that the distribution of the duties of Public Assistance among the various committees named by the Minority may spread them over a wider surface. The truth of the matter is that the effective carrying out of the suggestions of either report so far as they affect the local and voluntary administration of the law contemplated will impose very considerable tasks upon those who may be willing to undertake them. The public-spirited men and women who are willing to busy themselves

[1] Nos. I., II., III., IV., V., and VI. were published in THE LANCET of Feb. 27th (p. 638), March 6th (p. 706), 13th (p. 782), 20th (p. 859), and 27th (p. 935), and April 10th (p. 1065), 1909, respectively.

without remuneration, and at some expense to themselves, in the various branches of local government already have their energies pretty severely taxed. It is an open question how much more we can, to use a sporting phrase, "get out of them," and the essential aim of both reports is to cause work to be done which will require an infinitely greater amount of trouble, intelligence, and experience to perform it than is now brought into play by the whole combined body of guardians and charitable workers. It is true that we find recommendations which promise paid assistance of various kinds, including increased supervision and direction to be exercised by Government departments, but the fact remains the same, that the men and women will have to be found who will voluntarily carry out arduous duties and will work intelligently and lovingly for results the attainment of which will depend not upon the law under which they are appointed but upon their own goodwill, wisdom, and industry. In a great cause all may wish to be industrious, and if voluntary workers are to be so, surely paid ones may justly be expected not to be laggards. At the same time the Commissioners assume that there is at the command of counties and boroughs an amount of labour which regarded as a mere expenditure of time is of no light character. We suggested a doubt in our fifth article[2] as to the possibility of exercising compulsion upon the patients who fail to carry out sanitary and dietetic rules propounded to them by medical officers. These are to impart advice upon such topics as well as, or in preference to, the prescription of medicine and medical extras, which, regrettably no doubt, are now as a rule the limit of the Poor-law medical officer's assistance to his patient. With the question of the exercise of compulsion the medical profession will not be directly concerned. If it is to be applicable in any form it will be preceded in all cases by instruction and persuasion, having for their object prevention rather than cure. If, however, the medical officer is to persuade, to reason, and to instruct, when dealing with stupid and unruly people, with the object of preventing them and their children, as far as possible, from becoming burdens to the community, a great deal of time and trouble will have to be expended before it will be possible to tabulate satisfactory results in a statistical form.

It is not the desirable character of the objects aimed at by the Commissioners in their recommendations which has been questioned and which will have to be closely considered by the legislator in future sessions of Parliament, but the practical possibility of realising some of their ideals in the ordinary circumstances of life among the working or unemployable poor. The question of compulsion has to be borne in mind continually in perusing both reports, and is not peculiar to either. It arises, for example, when we study the Minority's opinion as to the causes of, and remedy for, the evils of casual labour—an exceedingly interesting document. Without compulsion how is the casual labourer, the man who prefers discontinuous work, to be made to abandon it, should he not desire to do so? As a writer in the *Times*[3] has asked, "Is it politically possible to take away a man's freedom, or to allow him to starve, not because he will not work at all, but because he prefers not to work continuously?" Of course, when we contemplate the carrying out of the advice of such a body as the Royal Commissioners, whose reports we are considering, we must always bear in mind that legislation possibly following the general lines laid down may be modified in very important matters of detail when the question of actually drafting a Bill has to be considered. The change of area and of authority may be the first great practical detail to be settled when the Poor-law is reformed, and may be the one with which the general public will most concern itself. Upon the enlargement of area and upon the institution of a new authority or authorities there will, however, follow necessarily other changes of detail in a large proportion of which the medical profession is concerned, for the greater part of the questions to be settled will be found to involve the physical care of the subject of poor relief with a view to his benefit in the present and to the safeguarding of the public in the future. It will then, no doubt, be found necessary to learn the deliberately formed opinions of persons outside the Commission, applying their personal experience and knowledge not to abstract propositions but to the criticism of formulated regulations affecting their own profession. Dr. Downes uttered a warning upon this subject in his memorandum, to which reference has been made.[4] As an instance of such opinions already evoked by the report may be cited the series of resolutions in which the Poor-law Medical Officers' Association has condemned some of the proposals outlined by the majority of the Commissioners as to the medical service to be rendered under the contemplated system of public assistance. These resolutions[5] expressed in uncompromising terms the disapproval of the association with regard to points upon which they may be at variance with the opinion of many lay administrators of the Poor-law and of members of the medical profession who have given evidence before the Commission, but they indicate very plainly that the questions raised are not settled by the Commission's report and that much remains to be said by persons who are clearly entitled to be listened to. It is interesting to note the following passage in the resolutions referred to as supporting the suggestion made above with reference to the magnitude of the scheme of medical work devised by the Commissioners: Resolution (4) "That the Council strongly condemns the proposal to make every medical practitioner a Poor-law medical officer, and it does so for the following reasons." We quote the second reason out of four: "(b) That the value of the work done could never be properly tested, as no system of Local Government Board inspection could deal with so widely extended an arrangement for Poor-law medical relief." Another of the five resolutions passed expresses the Association's disapproval of any change which would allow a poor person to claim State medical relief without the intervention of a relieving officer or assistance officer, a matter concerning the practical organisation of medical assistance upon which the expert opinion of those engaged in such medical work must command attention when any scheme is in a form to which definite criticism can be applied.

As to the matter of possible voluntary assistance, outside that rendered by members of local governing bodies to which reference has been made, more expert evidence will no doubt also be forthcoming, when sections and rules are formulated which for their efficient carrying out require a staff of voluntary workers to perform duties not before existing. Reference was made recently to such workers by the Bishop of Southwark in a speech which, we observe, welcomed the prospect of the State leaning upon and coöperating with the efforts of voluntary workers in philanthropic fields. If, however, the perfecting and preparing of matters of detail may be a long and tedious business, it is satisfactory to observe in conclusion that the reports of the Commissioners, both that of the Majority and that of the Minority, have aroused interest to a very striking degree, and it may be added that the problems of unemployment are so continually before us that this interest is not likely to be permitted to die out. The reports, however, of the Commissioners and that of Dr. McVail[6] draw attention to the urgency of other great questions, and point to possible improvements in existing conditions among the poor which are not so difficult of attainment as the abolition of unemployment. In Dr. McVail's report there is very interesting information with regard to the inadequacy of any effective treatment of phthisis, either curative or preventive, in existing conditions. This is one of many aspects of Poor-law medical relief, the contemplation of which has brought the Commissioners to unanimity in concluding that the existing Poor-law areas and the existing Poor-law authorities are inadequate for the purpose of efficiency and must be changed. The desirability of treating phthisis suitably, of bringing phthisical patients out of their homes into properly organised institutions from which the slur attaching to the workhouse now deters them, in rural districts at all events, is one which all can realise, and the disease is one to which popular attention and the sympathy of the lay public have been forcibly attracted. The proper care of the helpless children of widowed mothers or drunken and idle parents, or without parents, is another subject as to which the pressure of public feeling may not allow the postponement of reform.

The evidence given before the Commission will keep these

[2] See THE LANCET, March 27th, 1909, p. 836.
[3] The *Times*, March 23rd, 1909.

[4] See the Memorandum by Dr. Downes, The Report of the Royal Commission, p. 675, THE LANCET, Feb. 27th, 1909, p. 640.
[5] THE LANCET, March 20th, 1909, p. 862.
[6] See THE LANCET, April 10th, 1909, p. 1065.

matters alive, although it is not likely that our fellow citizens generally will assimilate the whole mass of it. The two volumes which have been summarised briefly in these articles, the reports of the Commission and of the Minority, the memorandum of Dr. Downes, and the report of Dr. McVail will be sufficient to content the great majority, and we commend the earnest study of them both to those who desire to appreciate the merits of future legislative proposals and to those who, until the Poor-law is altered, are charged with the administration of it. The latter may effect many improvements in the lot of those intrusted to their care without waiting for the law to compel reform and without exceeding powers which allow considerable scope to their discretion, energy, and intelligence.

THE ANNUAL REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1907.

THE publication of the annual report of the Sanitary Commissioner with the Government of India is always awaited with interest, for the information which it contains respecting the health of the population of our great Indian Empire, but it is unfortunate that the collection and preparation of statistics relating to this great public health department cannot be issued within a closer period to the year to which it relates. Much of the valuable medical material which the report supplies respecting the health of our troops, British and native, has, moreover, already been published in the searching and thorough report of the Director-General almost a year ago, and we are at a loss to understand the need for the duplication of effort and information.

For some years past the Sanitary Commissioner has compiled an interesting summary of current literature regarding enteric fever, gathered from papers and periodicals published on the Continent of Europe and in America. Much of this literature is written in foreign languages, a good deal of it being in German, which to many practitioners is unfortunately a sealed book. So that this summary with the comments of the Sanitary Commissioner may be said to place at the disposal of its readers the experiments and observations of scientific workers on this subject throughout the civilised world, material which otherwise would not be accessible to a considerable number. These summaries, it may be added, have been admittedly much appreciated, not only by officers of the Indian Medical Service, but by those engaged in public health work at home. Owing to the absence on leave in Europe of Lieutenant-Colonel J. T. W. Leslie, I.M.S., the Sanitary Commissioner, the preparation of the annual report for 1907 was intrusted to the officiating Commissioner, Lieutenant-Colonel C. J. Bamber, I.M.S. The plan of the report is the same as that of previous years and comprises nine sections which deal with different subjects, including the meteorology of the year, the health of the British and native troops, jails, vital statistics of the general population, the history of the chief diseases, vaccination, sanitary works, and general remarks. We are at the present moment dealing in a detailed manner with many of these reports separately. Seven sections of statistical matter are appended in the form of tables which are exceedingly useful for reference purposes.

The Health of the European Army.

Excluding officers, the average daily strength of the European army in India during 1907 was 69,332. Among the body of troops the general health was good, the rates of admission to hospital, of constantly sick, of mortality, and of invaliding being all lower than in the previous year and lower than the rates in the antecedent quinquennium. The first three of the rates above mentioned were the lowest as yet recorded among the European army in India. The decrease of sickness was due chiefly to there being fewer admissions on account of venereal diseases, ague, and simple continued fever (the chief causes of sickness during the year); but nearly all the more important diseases were less prevalent than during 1906. The death-rate for 1907 from all causes was 8·18 per 1000; the admission to hospital rate, 756·4; the constantly sick, 46·4; and the invaliding, 25·50. The main causes of invaliding were ague, debility, tubercle of the lungs, valvular disease of the heart, enteric fever, disordered action of the heart, and syphilis, these accounting together for one-half of the total number of invalidings. The number of men sent home on account of ague was 266, compared with 135 in 1906; tubercle of the lungs, 107, as against 92 in the previous year; 76 men were invalided for syphilis and 86 for enteric fever, compared with 120 and 115 respectively in 1906. There were 30 cases of small-pox and one death; 16 of the patients, it appears, had never been successfully revaccinated. The period which had elapsed between revaccination, if any, and the occurrence of the small-pox attack in the 14 other cases is not, however, stated. The patient who died had been vaccinated in infancy but had not been revaccinated. For intermittent fever 10,538 cases were admitted to hospital and nine died. At the divisional laboratories 6633 films of blood were examined for malarial parasites with a positive result in 2415 instances, or 36·4 per cent. Among European troops in India the benign tertian parasite, it seems, is by far the commonest. Only five patients came under observation with Malta fever, compared with seven in 1906. With regard to enteric fever, 910 cases were reported during the year, 192 of them proving fatal, as against 1095 attacks and 224 deaths in 1906; the amount of this disease has shown a marked decline during the last five years. The admission rate for enteric fever, 13·1 per 1000 of the average strength, was the lowest recorded since 1888, and similarly the death-rate from it was the lowest since 1885. Enteric fever was more prevalent among the troops in the southern than in the northern army, the divisions showing the greatest incidence being Mhow, Secunderabad, Meerut, and Rawalpindi. Burma showed the smallest incidence. In only one outbreak was the infection traced to contaminated water. Milk was probably the cause of certain cases. Uncooked vegetables and salads purchased from native hawkers were regarded as responsible for some occurrences, and in one instance mineral waters. Flies were regarded as one of the chief agents in spreading the disease at several stations and in some others infected dust was blamed. Two nursing orderlies were found to be bacillus carriers, as also a cook. In the valuable summary of the year's literature of enteric fever, which is given by the officiating Sanitary Commissioner, special attention is directed to the characters of the bacilli of paratyphoid and enteric fevers, the bacteriological methods of diagnosis, the ophthalmic reaction test, the Widal test, the isolation of the bacillus typhosus from the blood, the fæces, and the urine, as also from the tonsils and pharynx. The epidemiology of the disease is also discussed; and the subject of "chronic bacillus carriers," the methods of infection by contact, by water, and by milk, are also considered, as also are preventive measures. References to recent papers dealing with antityphoid inoculation and with serum-therapy are given, along with a list of books and papers referred to in this section. As regards venereal diseases the fall in the rates relating to these is one of the most remarkable features of the statistics of the European army in India, and is attributed in part to the efforts made by the officers and others to occupy the spare time of the men in healthy pastimes, and to make the regimental institutes comfortable and attractive, and by this means influencing the men to avoid contracting venereal infection. There are, too, better education and a higher moral tone among the soldiers, and increased knowledge of the dangers arising from these diseases, causing greater care in personal prophylaxis, and there is also undoubtedly less indulgence in alcohol. There were 17 suicides, of which eight were by gunshot, two by cut throat, two by hanging, one by drowning, one by fracture of the skull, and one each by poisoning with oxalic acid, opium, and sulphuric acid.

The Health of the Native Army of India.

The average strength of the native army in 1907 was 126,392, and their health was generally good, the rate for constantly sick, the invaliding rate, and the death-rate from all causes being the lowest on record. The decreased rate of admission to hospital was due to the lesser prevalence of ague. The admission rates for simple continued fever, dysentery, cholera, diarrhœa, and venereal diseases were lower than in 1906. There was a reduction in the mortality from tubercle of the lungs and remittent fever, but there was an increase in the mortality from enteric

fever and ague. The chief causes of sickness were intermittent fever, dysentery, simple continued fever, "other respiratory diseases," venereal diseases, and anæmia and debility. 12 cases were diagnosed as kala azar during 1907, compared with ten in 1906; the diagnosis was confirmed in every instance by finding the Leishman-Donovan parasites in the blood obtained by splenic or hepatic puncture, and in one case in smears from the spleen made after death. The infection, it is believed, was contracted in most, if not in all, cases when the men were on furlough at their homes. Relapsing fever caused 31 admissions and five deaths. There were 182 attacks from enteric fever, 62 from Malta fever, 85 from plague, 48 from small-pox, 34 from cholera, and 24 from typhus fever. The admissions for intermittent fever numbered 27,865, those from remittent fever 567, and from simple continued fever 2094. Tubercle of the lungs caused 324 admissions, and of these 42 died. There were only 1864 admissions for venereal diseases and two deaths. The admission rate for syphilis was 4·9 per 1000, for soft chancre 4·0, and for gonorrhœa 5·8. Guinea-worm caused 472 admissions and beri-beri only seven. Nine cases of suicide among native soldiers were reported in 1907, seven of them by gunshot, one by opium, and one by drowning.

The death-rate from all causes among the native troops was only 6·27, as compared with 8·18 among the European army in India.

The Jails of India.

There is a distinct improvement observed in the health of prisoners detained in the jails of India, the conditions under which they live being more favourable to them than if they lived outside. The scourges of the general population, like cholera and plague, now scarcely affect the prison statistics, and the medical officers of the jails have attained a high degree of success in preventing the spread of other communicable diseases in these institutions. On the other hand, the prison population contains a large number of famine-stricken, weakly, and unhealthy persons, but notwithstanding this the health of the prisoners during 1907 was good and the death-rate, calculated on an average daily population of 107,675 (including the Andaman Islands), was only 18·51 per 1000, the lowest rate as yet recorded in Indian jails. The diseases which caused the most admissions to hospital were intermittent fever, dysentery, abscesses, ulcers, boils, and diarrhœa. The most common causes of death were dysentery, tubercle of the lungs, and pneumonia. 56 cases of epidemic dropsy with five deaths, as also 107 cases of beri-beri, were reported during the year, and special investigations into these two diseases were made respectively by Captain D. Munro, I.M.S., Deputy Sanitary Commissioner of Bengal, and by Captain E. D. W. Greig, I.M.S., officiating director of the Central Research Institute, Kasauli.

Vital Statistics of the General Population.

The total population now under registration in India is 225,921,260, but there are still areas which have not yet been brought under registration, including some in the Madras Presidency, the Laccadive and Amindivi Islands, Eastern Bengal and Assam, the North-West Frontier Province, Lower Burma, and also considerable areas in Upper Burma. The population figures on which the rates are calculated are those of the 1901 census; but these obviously become less accurate for purposes of calculation as the date of the census recedes. The total births registered were 8,505,563, giving a birth-rate of 37·65 per 1000 of the population as compared with 37·80 and 39·13 in 1906 and 1905 respectively. The Central Provinces again showed the highest birth-rate—namely, 52·46, the lowest, 30·8, being yielded by the Madras Presidency. The mean number of males born to every 100 females was 106·8. The total deaths registered amounted to 8,399,623, a death-rate of 37·18, against 34·74 and 35·96 in 1906 and 1905 respectively. The highest death-rate occurred in the Punjab, 62·10, nearly half of which was due to plague. The Presidency of Madras had the lowest death-rate, namely, 24·3. The infantile mortality rate per 1000 children born was 215.

History of the Chief Diseases in India.

More than three-fourths of the total mortality was due to the following causes: "Fevers," plague, cholera, diarrhœa and dysentery, and small-pox, these diseases accounting for no fewer than 6,425,385 deaths out of the total 8,399,623 registered during 1907.

Fevers.—Under this heading, which is a somewhat indefinite one, 4,464,881 deaths were certified, giving a death-rate of 19·76 per 1000 of the population, and accounting for rather more than half of the total deaths from all causes. Many deaths are returned as from "fever" which are due to other causes; it is estimated that rather more than a million of them were due to malaria, and as plague was widely prevalent probably a number of deaths from it were returned as "fever." The provinces which yielded the largest number of deaths from "fevers" were the United Provinces and Bengal, which had respectively 1,350,405 and 1,171,540 such deaths reported.

Plague.—The deaths from plague in 1907 numbered 1,315,707 the highest total as yet recorded in any year since the beginning of the present epidemic in India. In the previous year only 300,355 plague deaths had been registered. The province which suffered most from plague in 1907 was the Punjab, where 608,685 fatal cases occurred, nearly a half of the total plague deaths in India during the year. In the United Provinces there were 328,862 fatal plague cases, in Bombay Presidency 93,609, and in Bengal 83,602.

Cholera.—No province escaped visitation by cholera in 1907. The total deaths from this cause amounted to 413,552 (including those in the native states), compared with 609,519 in 1906. The provinces in which the greatest number of cholera deaths occurred were Bengal, where 205,702 were certified; the Madras Presidency, 81,565; Eastern Bengal and Assam, 77,181; and the United Provinces, 22,438.

Diarrhœa and dysentery.—Under this heading 298,117 deaths were reported during the year, of which the Madras Presidency had 60,326; Bombay Presidency, 53,708; and Bengal, 51,670.

Small-pox.—From this cause 103,988 deaths were certified in 1907, as against 109,583 in 1906, and 70,912 in 1905. Of the deaths in 1907 Bengal was responsible for 29,066, the United Provinces for 22,645, and the Madras Presidency for 22,455.

Vaccination.

The total vaccinations amounted in the year to 9,169,873, which is a slight increase over the number performed in 1906. The percentage of success attained in primary cases was 97·65 and in revaccinations 75·45. All the provinces, except the Central Provinces and the North-West Frontier Province, as well as the two small provinces of Ajmer-Merwara and Coorg, maintain their own vaccine institutes for the production of lymph.

General Remarks.

At the Central Research Institute, Kasauli, as regards original research, the staff was engaged mainly in carrying on the inquiry regarding the etiology and mode of spread of enteric fever in India, which was begun in 1906. Other investigations connected with the problems of immunity and vaccine therapy were in progress at the end of the year. Investigation of the etiology and mode of spread of dysentery, on the same lines as that of enteric fever, has been begun. This institute also was engaged in the preparation of antivenene and curative sera, and also in routine bacteriological examination of specimens sent for diagnostic purposes. The Bombay Bacteriological Laboratory is used (1) for the preparation and issue of antiplague vaccine for the whole of India; (2) as the chief laboratory for plague research work; and (3) as the provincial laboratory for the Bombay Presidency. At the King Institute of Preventive Medicine, Madras, the bacteriological examination of specimens from medical officers, sanitary authorities, plague officials, and others, is carried out; also the chemical and bacterioscopic examination of water; and other scientific work is undertaken At the Pasteur Institute, Kasauli, 1349 persons, of whom 433 were Europeans, underwent the antirabic treatment in 1907 for bites of animals, mostly dogs; but in addition to 123 cases bitten by jackals there were others bitten by wolves and cats. There were only six failures to secure immunisation. This institute also serves as the provincial laboratory for the Punjab. The Pasteur Institute of Southern India, Coonoor, was opened in April, 1907; in it 186 patients have been treated, of whom four did not complete the full course. One patient died on the seventh day and eight remained under treatment at the end of the year. There was no failure, since the fatal case had been bitten by a jackal 29 days before he came under treatment.

It is satisfactory to learn that the Secretary of State towards the end of 1907 sanctioned proposals for placing the various existing appointments connected with the bacteriological laboratories on a definite footing and for the creation of additional appointments. A list of scientific publications issued during the year by members of the Indian Medical Service is appended.

Looking Back.

FROM

THE LANCET, *SATURDAY*, April 16th, 1831.

INVENTION OF THE STOMACH-PUMP.

To the Editor of THE LANCET.

SIR,—While turning over, the other day, the lectures of Sir A. Cooper, published by you in THE LANCET, I was surprised to find Sir Astley attribute the invention of the stomach-pump, as applicable to the removal of poisons from the stomach, to Mr. Jukes of Pimlico, in the following words:—"With respect to the medical application of the syringe, however, for the purpose of removing poisons from the stomach, we are indebted for it to Mr. Jukes." Without wishing to detract from the merit of Mr. Jukes, in having introduced to public notice so valuable an instrument, I must remark that a precisely similar instrument was invented, many years since, by M. Renault, a French surgeon and that a description of it by Alibert exists as far back as the year 1804. An extract may not be uninteresting to those who dip a little into medical literature.

"If great difficulty be experienced in compelling the stomach of a person who has taken poison, to reject its contents, if the jaws be affected by tetanus to such a degree that nothing can be introduced into the stomach, M. Renault proposes that we have recourse to a tube of gum-elastic, of sufficient length to reach by one extremity into the stomach, and of sufficient calibre to give free passage to any matter we may wish to introduce into this viscus. The external extremity of the tube is mounted with a metal ring, to which a syringe may be adapted. M. Renault is of opinion that, with the assistance of this tube, we may inject a sufficient quantity of liquid into the stomach and afterwards withdraw it by the action of the piston."

I remain, Mr. Editor,
Your obedient servant,
P. H. GOWER.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8802 births and 5653 deaths were registered during the week ending April 3rd. The annual rate of mortality in these towns, which had been 22·1 and 19·8 per 1000 in the two preceding weeks, further declined to 17·9 in the week under notice. During the 13 weeks of the past quarter the death-rate in these towns averaged 18·8 per 1000, and in London the mean rate during the same period was equal to 19·6 per 1000. The lowest annual death-rates recorded in these towns in the week under notice were 6·0 in Hornsey, 8·0 in Walthamstow, 8·3 in Barrow-in-Furness, and 8·9 in Smethwick; the rates in the other towns ranged upwards to 24·4 in Oldham, 27·0 in Wigan, 27·3 in Great Yarmouth, 28·1 in Warrington, and 30·7 in St. Helens. In London the recorded death-rate during the week was equal to 18·3 per 1000. The 5653 deaths from all causes in the 76 towns during the week showed a further decline of 598 from the number in the preceding week, and included 578 which were referred to the principal epidemic diseases, against 725 and 683 in the two preceding weeks; of these 578 deaths, 329 resulted from measles, 103 from whooping-cough, 49 from diphtheria, 46 from diarrhœa, 41 from scarlet fever, nine from "fever" (principally enteric), and one from small-pox. No death from any of these epidemic diseases was registered during the week in Gateshead, Leyton, Birkenhead, Halifax, or in nine other smaller towns; the annual death-rate therefrom, however, ranged upwards in the other towns to 4·0 in Preston, 8·6 in Wigan, 9·4 in Warrington, and 15·9 in St. Helens. The fatal cases of measles, which had been 438 and 410 in the two preceding weeks, further declined to 329 in the week under notice; the highest death-rates from this disease were 3·1 in Reading and in Sheffield, 3·8 in Bootle, 3·9 in West Hartlepool, 4·6 in Wigan, 8·7 in Warrington, and 14·8 in St. Helens. The 103 deaths from whooping-cough showed a further decline from the numbers in recent weeks, but caused death-rates equal to 1·1 in St. Helens and in Swansea, 1·7 in Norwich, and 3·1 in Preston. The 49 deaths from diphtheria were ten fewer than the number in the preceding week, the highest death-rate from this disease being 1·1 in Huddersfield. The 46 fatal cases of diarrhœa exceeded the number recorded in any of the previous six weeks; in Wigan the mortality from this cause was equal to 2·9. The 41 deaths from scarlet fever showed no variation from the number in the preceding week, and included 12 in London and its suburban districts, ten in Manchester, and four in Liverpool. The nine deaths referred to "fever" showed a further considerable decline from the numbers in recent weeks. The fatal case of small-pox was recorded in Bristol. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospitals, which had been 2596 and 2571 at the end of the two preceding weeks, had further decreased to 2462 on April 3rd; the new cases of this disease admitted to these hospitals during the week numbered 273, against 279 and 327 in the two preceding weeks. The registered deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 651 and 567 in the two preceding weeks, further declined to 399, but were 55 in excess of the corrected average number in the corresponding week of the five years 1904–08. The deaths in London referred directly to influenza during the week declined to 107, but exceeded the corrected average by 75. The causes of 51, or 0·9 per cent., of the deaths registered in the 76 towns during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Leicester, and in 46 other smaller towns; of the 51 uncertified causes of death, however, nine were registered in Liverpool, eight in Birmingham, four in Sheffield, and three in London and in Manchester.

During the week ending April 10th 8230 births and 5364 deaths were registered in 76 of the largest English towns. The annual rate of mortality in these towns, which had declined from 22·1 to 17·9 per 1000 in the four preceding weeks, further fell to 17·0 last week. For the 13 weeks of the past quarter the death-rate in these towns averaged 18·8 per 1000, and in London the mean rate for the same period was 19·6 per 1000. The lowest recorded death-rates in these towns last week were 4·4 in Hornsey, 7·8 in Stockton-on-Tees, 8·2 in Handsworth (Staffs), and 8·4 in Walthamstow and in Ipswich; while the rates in the other towns ranged upwards to 24·5 in Birkenhead, 28·2 in Middlesbrough, 29·0 in Tynemouth, and 31·8 in St. Helens. In London the recorded death-rate during the week was equal to 15·9 per 1000. The 5364 deaths from all causes in the 76 towns last week showed a decline of 284 from the number in the previous week, and included 593 which were referred to the principal epidemic diseases, against 725, 683, and 573 in the three preceding weeks; of these 593 deaths, 327 resulted from measles, 107 from whooping-cough, 53 from diphtheria, 47 from scarlet fever, 37 from diarrhœa, and 22 from "fever" (principally enteric), but not any from small-pox. The 593 deaths from these epidemic diseases in the week under notice were equal to an annual rate of 1·9 per 1000, against rates declining from 2·3 to 1·8 in the three preceding weeks. No death from any of these epidemic diseases was registered last week in Leyton, Halifax, Hornsey, Newport (Mon.), Ipswich, or in six other smaller towns; the death-rates therefrom ranged upwards, however, to 4·5 in Bootle, 4·6 in Portsmouth, 6·5 in Sunderland, and 10·4 in St. Helens. The fatal cases of measles in the 76 towns, which had declined from 438 to 329 in the three preceding weeks, further fell to 327 last week; the highest death-rates from this disease in the week under notice were 3·0

in Bootle, 3·1 in Reading, 3·2 in Portsmouth, 3·3 in Sheffield, 5·2 in Sunderland, and 8·2 in St. Helens. The 107 deaths from whooping-cough showed a slight increase over the number in the preceding week, and caused death-rates equal to 1·0 in Walsall and in Stockport, 1·1 in St. Helens, 1·2 in York, 1·3 in Coventry, and 1·5 in Rhondda. The 53 fatal cases of diphtheria were four in excess of the number in the previous week, the highest death-rates from this cause being 1·0 in Portsmouth and in Wolverhampton and 1·2 in Rhondda. The 47 deaths from scarlet fever exceeded the number recorded in any of the preceding 11 weeks, and caused rates ranging upwards to 1·3 in King's Norton and 2·2 in Wallasey. The 37 fatal cases of diarrhœa showed a decline from the numbers in recent weeks; the highest death-rates from this disease were 1·1 in Swansea, 1·2 in Aston Manor, and 1·5 in Smethwick. The deaths referred to "fever," which had been 22, 15, and nine in the three preceding weeks, rose again to 22 last week, and included two each in London, Manchester, Huddersfield, and Middlesbrough. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 2873 to 2462 at the end of the five preceding weeks, had further fallen to 2418 on Saturday, April 10th; 256 new cases were admitted during the week, against 279, 327, and 273 in the three preceding weeks. The registered deaths in London referred to pneumonia and other diseases of the respiratory organs, which had decreased from 758 to 399 in the four preceding weeks, further declined last week to 310, and were 46 below the corrected average number in the corresponding week of the five years 1904–08. The deaths in London referred directly to influenza fell last week to 62, having been 125, 138, and 107 in the three preceding weeks. The causes of 44, or 0·8 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in London, Leeds, Bristol, West Ham, Newcastle-on-Tyne, Nottingham, Salford, and in 48 other smaller towns; the 44 uncertified deaths included seven in Birmingham, five in Gateshead, four in Liverpool and in Sheffield, and three in Manchester and in St. Helens.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 21·6, 21·1, and 20·5 per 1000 in the three preceding weeks, further declined to 19·9 in the week ending April 3rd. During the 13 weeks of the past quarter the death-rate in these eight towns averaged 19·5 per 1000, and exceeded by 0·7 the mean rate during the same period in the 76 large English towns. Among the eight Scotch towns the death-rates during the week under notice ranged from 13·8 in Aberdeen and 15·2 in Leith, to 23·3 in Paisley and 24·5 in Greenock. The 712 deaths from all causes registered in the eight towns showed a further decline of 20 from the numbers in recent weeks, and included 78 which were referred to the principal epidemic diseases, against 96, 87, and 80 in the three preceding weeks; of these 78 deaths, 47 resulted from whooping-cough, 14 from diarrhœa, six from diphtheria, five from scarlet fever, five from "fever," and one from measles, but not any from small-pox. These 78 deaths from epidemic diseases were equal to an annual rate of 2·2 per 1000, or 0·4 per 1000 above the mean rate during the week from the same diseases in the 76 English towns. The fatal cases of whooping-cough, which had been 51 and 52 in the two preceding weeks, declined again to 47 in the week under notice, and included 32 in Glasgow, nine in Aberdeen, three in Edinburgh, and two in Dundee. The deaths from diarrhœa, which had decreased from 23 to eight in three preceding weeks, rose again during the week to 14, of which eight occurred in Glasgow, three in Dundee, and two in Edinburgh. The six fatal cases of diphtheria showed a further decline from the numbers in the two preceding weeks, and were all registered in Glasgow. Four of the five deaths from scarlet fever also occurred in Glasgow, as did three of the five deaths referred to "fever," of which two were certified as enteric fever and one as cerebro-spinal meningitis; one fatal case of enteric fever occurred in Perth and one of cerebro-spinal meningitis in Edinburgh. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 187 and 180 in the two preceding weeks, further declined to 163 in the week under notice, but exceeded by 49 the number registered in the corresponding week of last year. The causes of 26, or 3·8 per cent., of the deaths registered in the eight towns during the week were not certified; in the 76 English towns the proportion of uncertified causes of death did not exceed 0·9 per cent.

The annual rate of mortality in eight of the principal Scotch towns, which had declined from 21·6 to 19·9 per 1000 in the four preceding weeks, further fell to 17·7 per 1000 in the week ending April 10th. During the 13 weeks of the past quarter the annual death-rate in these eight towns averaged 19·5 per 1000, and exceeded by 0·7 per 1000 the rate during the same period in the 76 large English towns. Among the eight Scotch towns the death-rates in the week under notice ranged from 11·9 in Paisley and 13·4 in Leith, to 19·6 in Glasgow and 20·6 in Dundee. The 634 deaths from all causes registered in the eight towns last week showed a further decline of 78 from the number in the preceding week, and included 90 which were referred to the principal epidemic diseases, against 87, 80, and 78 in the three preceding weeks; of these 90 deaths, 55 resulted from whooping-cough, 13 from diarrhœa, nine from diphtheria, seven from "fever," three from measles, and three from scarlet fever, but not any from small-pox. These 90 deaths were equal to an annual rate of 2·5 per 1000, being 0·6 per 1000 above the mean rate last week from the principal epidemic diseases in the 76 large English towns. The fatal cases of whooping-cough in the Scotch towns, which had been 52 and 47 in the two preceding weeks, rose again last week to 55, of which 42 occurred in Glasgow, four in Dundee, three in Edinburgh, and two in Aberdeen. The 13 deaths from diarrhœa were slightly below the number in the previous week, and included eight in Glasgow and three in Dundee. The fatal cases of diphtheria, which had been 12, eight, and six in the three preceding weeks, rose again last week to nine, of which four were registered in Glasgow and two in Dundee. Of the seven deaths referred to "fever," four of enteric and two of cerebro-spinal meningitis occurred in Glasgow, and one of cerebro-spinal meningitis in Paisley. All the three fatal cases of scarlet fever were registered in Glasgow; and two of the three deaths from measles occurred in Aberdeen. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 187, 180, and 163 in the three preceding weeks, further fell to 108 in the week under notice, and were 20 fewer than the number in the corresponding week of last year. The causes of 25, or 3·9 per cent., of the deaths registered in the eight towns last week were not certified; in the 76 English towns the proportion of uncertified causes of death did not exceed 0·8 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been 29·3 and 27·2 per 1000 in the two preceding weeks, further declined to 25·9 per 1000 in the week ending April 3rd. During the 13 weeks of the past quarter the death-rate averaged 25·7 per 1000, the mean rate during the same period being 19·6 in London and 18·1 in Edinburgh. The 198 deaths of Dublin residents from all causes during the week under notice showed a further decline of ten from the numbers in the two preceding weeks, and included 20 which were referred to the principal epidemic diseases, against 17, 13, and ten in the three preceding weeks. These 20 deaths were equal to an annual rate of 2·6 per 1000; the rate from these epidemic diseases in the same week was equal to 1·8 in London, and did not exceed 0·9 in Edinburgh. Of the 20 deaths from these epidemic diseases in Dublin during the week, eight resulted from measles, six from whooping-cough, four from diphtheria, and two from diarrhœa; the mortality from each of these diseases exceeded that recorded in recent weeks. No death from small-pox, from scarlet fever, or from "fever" was registered during the week under notice. The 198 deaths in Dublin during the week included 36 of infants under one year of age and 58 of persons aged upwards of 60 years, the latter being 15 below the number recorded in each of the two preceding weeks. Three inquest cases and three deaths from violence were registered during the week; and 78, or 39·4 per cent.,

of the deaths occurred in public institutions. The causes of five, or 2·6 per cent., of the deaths in Dublin last week were not certified either by a registered medical practitioner or by a coroner; in London the causes of all but three of the 1701 registered deaths were duly certified; while in Edinburgh 5·6 per cent. of the causes of death were uncertified.

The annual rate of mortality in Dublin, which had declined from 29·3 to 25·9 per 1000 in the three preceding weeks, further decreased to 25·5 in the week ending April 10th. During the 13 weeks of last quarter the death-rate averaged 25·7 per 1000, whereas the mean rate during the same period did not exceed 19·6 in London and 18·1 in Edinburgh. The 195 deaths of Dublin residents from all causes during the week under notice showed a further slight decline from the numbers in recent weeks, and included 17 which were referred to the principal epidemic diseases, against 10 and 20 in the two preceding weeks. These 17 deaths were equal to an annual rate of 2·2 per 1000; the rate from these epidemic diseases in the same week was equal to 1·8 in London and 0·6 in Edinburgh. Of the 17 deaths from these epidemic diseases in Dublin last week, seven resulted from whooping-cough, six from measles, two from diarrhœa, one from diphtheria, and one from "fever," but not one either from scarlet fever or from small-pox; the deaths from whooping-cough just exceeded the number in the preceding week, while those from measles showed a small decrease. The 195 deaths registered during the week included 39 of infants under one year of age and 52 of persons aged upwards of 60 years; these numbers being respectively three above and six below the corresponding numbers in the previous week. Seven inquest cases and four deaths from violence were registered; and 89, or 45·6 per cent., of the deaths occurred in public institutions. The causes of six, or 3·1 per cent., of the deaths in Dublin last week were not certified either by a registered medical practitioner or by a coroner; in London all of the 1470 deaths were duly certified, while in Edinburgh 3 per cent. of the causes of death were uncertified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Inspector-General of Hospitals and Fleets James Porter, C.B., Director-General of the Medical Department of the Navy, has been appointed Honorary Physician to His Majesty, in place of Inspector-General of Hospitals and Fleets Sir John Watt Reid, K.C.B., LL.D., K.H.P., deceased (dated Feb. 25th, 1909).

The undermentioned Surgeons have been promoted to the rank of Staff-Surgeon in His Majesty's fleet: Alfred James Hewitt (dated Feb. 26th, 1908), John Verdon (dated August 2nd, 1908), and John Thornhill (dated Feb. 11th, 1909).

The following appointments are notified:—Fleet-Surgeons: H. W. G. Doyne, H. W. Finlayson, H. W. Gordon-Green, and A. S. G. Bell to the *President*, additional, for three months' course at West London Hospital; and J. Chambers to the *President*, additional, for three months' course at West London Hospital. Staff-Surgeons: R. H. Mornement, W. G. Westcott, J. O'Hea, H. V. Wells, D. V. Lowndes, P. F. Alderson, and G. O. M. Dickenson to the *President*, additional, for three months' course at West London Hospital; J. Verdon to the *Kinsha;* M. P. Jones and A. W. B. Livesay to the *President*, additional, for three months' course at West London Hospital; J. Whelan to the *Adventure;* J. Mowat to the *Cressy;* A. J. Wernet to the *Iphigenia;* M. Cameron to the *Attentive* (appointment to the *Cressy* cancelled); W. B. Macleod to the *Bonaventure;* and H. Huskinson to the *Africa*.—Surgeons: M. T. Male to the Royal Marine Artillery, Eastney; P. T. Nicholls to the *Victory*, additional, for disposal; E. Cameron to the *Terrible;* S. F. Dudley to the *Commonwealth;* and G. L. Buckeridge to the *Astræa*. Civil Practitioner: H. D. Johns, to be Surgeon and agent at Hornsea and Aldborough.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Francis A. B. Daly, C.B., retires on retired pay (dated April 14th, 1909).

ROYAL MALTA ARTILLERY.

Surgeon-Captain Alfred E. Mifsud to be Surgeon-Major (dated April 1st, 1909).

SPECIAL RESERVE.

Royal Army Medical Corps.

The rank of Captain James C. McCarroll is as now described, and not as stated in the *Gazette* of Nov. 17th, 1908.

Captain Herbert E. Dalby, having assented to be transferred, is appointed an officer of the Special Reserve of Officers, retaining the rank and seniority which he held in the Militia (dated Sept. 20th, 1908).

MILITIA.

Royal Army Medical Corps.

Lieutenant James C. McCarroll to be Captain (dated August 18th, 1908).

TERRITORIAL FORCE.

Royal Field Artillery.

3rd East Anglian (Howitzer) Brigade: Surgeon-Lieutenant Richard W. Mullock to be Surgeon-Captain (dated April 1st, 1908). 1st Northumbrian Brigade: Surgeon-Major John V. W. Rutherford is granted the honorary rank of Surgeon-Lieutenant-Colonel (dated March 31st, 1908).

Royal Army Medical Corps.

1st London (City of London) General Hospital: Major Howard H. Tooth, C.M.G., is seconded for service with the London University Contingent, Senior Division, Officers Training Corps (dated March 13th, 1909).

1st North Midland Field Ambulance: Charles Damien Lochrane to be Lieutenant (to be Supernumerary) (dated Feb. 4th, 1909).

2nd Northern General Hospital: Surgeon-Captain Reginald George Hann, from the 7th Battalion, The Prince of Wales's Own (West Yorkshire Regiment), to be Major (dated Feb. 22nd, 1909).

For attachment to Units other than Medical Units.—Supernumerary Surgeon-Lieutenant William Dyson from the 4th Battalion, The King's (Shropshire Light Infantry), to be Lieutenant (dated March 10th, 1909). Thomas Heyliger Richmond to be Lieutenant (dated August 2nd, 1908). Captain Edmond U. F. MacW. Bourke to be Major (dated March 1st, 1909). Cyril Howard Welch to be Lieutenant (dated March 9th, 1909).

THE CLOSE OF THE SESSION AT HASLAR.

The course of instruction of the newly entered surgeons at Haslar was brought to a close on March 30th by the distribution of prizes by the Commander in Chief at Portsmouth, Admiral Sir A. D. Fanshawe, K.C.B. The gold medal was gained by Surgeon W. A. H. McKerrow of the University of Aberdeen; the microscope was awarded to Surgeon F. G. Hitch of the London Hospital; and the silver medal and books were awarded to Surgeon J. Glaister of the University of Glasgow. The following list shows the places gained by the combined marks of the London and Haslar examinations:—

No.		Marks.	No.		Marks.
1.	Surgeon W. A. H. McKerrow	5479	7.	Surgeon A. V. J. Richardson	4428
2.	Surgeon F. G. Hitch ...	5446	8.	Surgeon F. W. Quirk ...	3898
3.	,, J. Glaister ...	4763	9.	,, S. L. McBean ...	3881
4.	,, T. R. Lloyd-Jones	4586	10.	,, G. R. McGowan	3880
			11.	,, E. J. H. Garstin	3749
5.	Surgeon F. G. H. R. Black	4575	12.	,, W. Mearns ...	3384
			13.	,, W. Bradbury ...	3303
6.	Surgeon C. F. Bainbridge	4457	14.	,, A. C. Wilson	Absent ill.

Eight of the competitors held University degrees.

WEST LONDON HOSPITAL, HAMMERSMITH.—At the annual meeting of the supporters of this hospital the Duke of Abercorn, the president of the hospital and chairman of the meeting, appealed for annual subscriptions and said that there had been a large falling off in legacies and donations. The Bishop of London expressed his regret that this should be so, adding that this hospital was a kind of lifeboat for that part of London and that the amount given by the King's Hospital Fund was a vote of confidence in the hospital. It is particularly desired to improve the accommodation provided for the nurses.

Correspondence.

"Audi alteram partem."

TIN IN CANNED FOODS.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a letter in THE LANCET of April 3rd, in which Dr. H. W. Wiley expresses his opinion that the results of certain experiments made by Dr. Schryver on this subject (taking known doses of non-irritant salts of tin with a view to determining the degree to which tin was absorbed from the alimentary tract) had better not have been stated because the statement may give encouragement to canners to continue improper practices.

Criticisms from Dr. Wiley on a matter of this sort deserve very careful consideration. He is chief of the Bureau of Chemical Industry in the United States, his efforts to secure the greater purity of foods are well known and appreciated in this country, while in the case of canned foods he has been endeavouring to secure the use of better grades of tin plate by American canners. Dr. Schryver and I have recently made reports to the Local Government Board—"On the Presence of Tin in Certain Canned Foods"—which include an account of the experiments referred to. The statement to which Dr. Wiley takes exception was—

> They (these experiments) do not indicate much probability of serious risk of chronic poisoning by the absorption of non-irritant compounds of tin as a result of a diet which consists largely of canned foods and is continued over considerable periods of time.

If this is objected to, I can only say that it is not the practice in this country to withhold the results of experiments which have been carefully carried out even for such laudable objects as those indicated in Dr. Wiley's letter. I should not, however, have troubled you with any comment on this matter were it not for the consideration that, coupled with your own note on our reports in THE LANCET of Feb. 6th, Dr. Wiley's letter may convey the impression that the general effect of these reports is to suggest that no attention is required in the interests of public health to contamination of foods by tin.

To avoid any such misconception by your readers who have not seen the reports themselves, I would point out that they cover a considerably wider field than the individual experiments which Dr. Wiley discusses. The latter are contained in a section of Dr. Schryver's report which deals with the evidence available as to the accumulation of tin in the body as a result of continued ingestion of small quantities of tin such as are frequently present in properly canned foods of ordinary age. But Dr. Schryver's report also includes a collection of cases in which canned foods containing unusually large amounts of tin have been associated with definite irritant poisoning, and has further indicated the extent to which the degree of contamination of canned foods by tin is governed by the character of the food canned and the time which has elapsed since canning.

The need for discouraging the use by canners of unsatisfactory tin plate, together with the importance of avoiding contamination by tin through improper methods of soldering, is given prominence in my report, which also contains suggestions as to the control which sanitary authorities in this country may be able to exercise in the matter. It appears to be established that practically all canned foods contain some tin, and that at present no positive evidence can be ascertained of harm resulting from the small quantities of tin which may frequently be taken in this way. No suggestion has been made, however, that precautions should not be taken to prevent the introduction of exceptional or excessive amounts of tin into these foods. The basis of such precautions is the employment of satisfactory tin plate and methods of soldering, and also recognition of the fact that contamination by tin increases with the age of the can—a matter of practical importance where acid foods such as canned fruits and meat extractives are concerned. I cannot, however, admit that because this is the end to be attained we should be justified in suppressing the results of experiments because these results may possibly be misused by unscrupulous people.—I am, Sir, yours faithfully,

London, April 14th, 1909. G. S. BUCHANAN.

SPONTANEOUS CURE OF THORACIC ANEURYSM.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 3rd and 10th accounts have appeared of the spontaneous cure of thoracic aneurysm. The following case bears upon these, not so much as a case of complete spontaneous cure, but one of nature's attempts at the same, where visible changes could be watched with the naked eye. About Michaelmas, 1906, a man, about 46 years of age, complained of pain in the chest and lower ribs. The pain in the chest extended through to the shoulder blades and the muscles of the back of the neck. This latter symptom had, he told me, led to a diagnosis of muscular rheumatism. When I saw him about 12 months later, he then told me that he had left off work just previously and was suffering from rheumatism in his neck. On placing the hand over the front of the chest a distinct heaving impulse was felt, and upon auscultation a double murmur. In due course a very troublesome cough set in with dyspnœa. There was no œdema or loss of voice, nor any hæmoptysis. About six weeks after I first saw him the heaving impulse distinctly pointed at the side of the sternum about the level of the third rib cartilage, and a pulsating swelling of about the size of a hen's egg made its appearance, occupying quite half of the breadth of the sternum. The man was now bad, and it seemed a question whether the aneurysm would burst through the skin or into the bronchus, and as the skin remained intact I fully expected the latter at any moment. I had him watched night and day and kept him absolutely quiet in bed and administered morphia regularly. After some weeks of expectation the man began to improve; the pulsating swelling which probably perforated the sternum without any spontaneous fracture lessened and finally disappeared, and at the present time, with the exception of a little tenderness in the third interspace to the left of the sternum, nothing remains to tell the tale. In the absence of any definite pressure symptoms or any alteration in either pulses or carotids or subclavians I considered the case to be one of aneurysm of the first part of the arch with a considerable sacculus giving the outward and visible signs. The man felt so much better that he wished to resume his ordinary occupation, but to this I would not consent.

In his present condition the patient presents a chest distinctly generally bulged and heaving on the left side, dull on percussion from the left clavicle to the right edge of the sternum. There is a soft systolic murmur all over both sides of the chest. There is a thrill over the left subclavian artery and a systolic murmur over the right subclavian and right carotid arteries. A systolic murmur is heard over the back. The right chest also heaves, but there is no tumour or thrill, and over the left side the breath-sounds are almost inaudible.—I am, Sir, yours faithfully,

JOHN J. WADDELOW, F.R.C.S. Eng.

Whittlesey, April 12th, 1909.

To the Editor of THE LANCET.

SIR,—About 30 years ago a chaplain to the forces who had been under treatment by the late Mr. Tufnell for aortic aneurysm was waiting for his train at the King's Bridge station, Dublin, on his way to the Curragh to resume duty. He suddenly leaped over the wall of the platform on to the foreshore of the Liffey, falling perhaps 20 feet. Although he fractured no bones he died from shock. He had been brought to Dr. Steevens' Hospital, and at the post-mortem examination it was seen that the solid clot which filled the aneurysm was in no way disturbed by the fall, and I very distinctly remember its smooth surface where it filled the entrance from the lumen of the artery.

I am, Sir, yours faithfully,

April 12th, 1909. T. C. D.

THE CLINICAL VALUE OF HÆMOMANOMETER OBSERVATIONS.

To the Editor of THE LANCET.

SIR,—I regret to find that I have drawn an inaccurate inference from Professor Starling's experiment referred to in my letter in THE LANCET of April 3rd—the result of a hurried glance through his Mercers' Company lectures which had just come into my hands, and of not allowing enough for

the difference between mercury and sulphate of magnesia solution. The relations between the arterial and venous pressures were: At the beginning, 11 arterial (Hg) to 14 venous ($MgSO_4$ solution); during experiment, 5 arterial (Hg) to 17·5 venous ($MgSO_4$ solution). The experiment did not show the height to which venous engorgement pressure can be raised, as the venous outflow was not arrested, it was only impeded.

The controversy initiated by Dr. Leonard Hill seems to me to have narrowed itself down to the question of the height to which *venous engorgement* pressure can rise. I have quite "grasped the fact" that Dr. Hill believes "that the venous blood pressure cannot exceed the arterial." I have, however, also grasped the fact that Dr. Hill's observations do not prove what they were thought to prove, but seem to prove, if they prove anything, the unsoundness of the proposition that venous engorgement pressure cannot exceed arterial. I entirely agree with him, however, that it is useless to continue the discussion further, but I would venture to suggest that a point has been defined where experimental physiology might be of assistance in settling the question, which is of somewhat wide interest from its relations to various phenomena which I have avoided referring to in this correspondence.

In closing the correspondence as far as I am concerned, I desire to express my appreciation of Dr. Oliver Williamson's generous recognition of the accuracy of my clinical observations.

I am, Sir, yours faithfully,

Edinburgh, April 10th, 1909. WILLIAM RUSSELL.

THE PROXIMATE FACTOR OF DELIRIUM TREMENS.

To the Editor of THE LANCET.

SIR,—I cannot altogether concur with the views expressed by Dr. F. Hare in his letter to THE LANCET of April 10th. I am not in agreement with him in his statement that "delirium tremens is a complication which mainly, if not solely, affects the chronic alcoholic as distinguished from the dipsomaniac and the numerous varieties of impulsive drunkards," &c.

In my experience, and I have referred to the records of several hundreds of cases, there are many more regular or continuous drunkards than periodic drunkards, but the latter are just as liable to suffer from delirium tremens as are the former. And while the cutting off of liquor without the substitution of suitable treatment may precipitate an attack of the malady, the disorder may and does occur among those who are at the time drinking heavily, and who are not troubled with vomiting or other symptoms which denote that the digestive tract refuses to retain or to absorb alcohol. Referring to the Norwood Sanatorium report of which notice has been taken in your issue of March 27th, that institution is described as being under the supervision of an influential advisory medical committee, and it is advertised that the object of the institution is to "place the therapeutics of inebriety upon a definite scientific basis," an advertisement, by the way, which seems to reflect on the labours of such men as Sir B. W. Richardson, Dr. Norman Kerr, and many others. The admission, therefore, that in such an institution there occurred during two years some 6 per cent. to 7 per cent. of such grave complications as delirium tremens and alcoholic epilepsy is a somewhat startling one.

Dr. Hare appears to desire further clinical evidence as to the advisability of a sudden discontinuance of alcoholic liquors in the treatment of inebriates. I will give him clinical evidence. At the Dalrymple Home retreat during the past 25 years there have been admitted some 900 inebriates. During the first 15 years of this period Dr. R. Welsh Branthwaite held the post of medical superintendent, and in this period there occurred three cases of after admission delirium tremens. One occurred a few weeks after Dr. Branthwaite commenced his duties, and this case he considered with the light of further experience was a preventable one. The second case was found on the morning after admission to be suffering from double pneumonia and delirium. The third occurred during his absence on a holiday.

During the past ten years I have been superintendent here, and not a single case of delirium tremens has developed among patients after admission. I have experienced three "scares" in cases where the patient passed a restless first night and when, in the morning after admission, the condition appeared to be threatening, but in each case I have been fortunate enough to get the patient to sleep in the early afternoon and have had no further trouble.

I have had to treat only one case of alcoholic epilepsy, this occurred some four months after admission of the patient. He had indulged in beer when on parole, and in his case quite a small quantity of liquor produced this condition. For this absence of complications I am largely indebted to Dr. Branthwaite, for I profited by his experience. All of Dr. Branthwaite's cases and all of mine during my first eight years were treated by absolute withdrawal of liquor. During the past two years I have very occasionally given to patients some brandy or whisky during the first day or two if they particularly desired it. This I have done not with any idea of preventing complications but merely as a placebo. A certain amount of spirit has been given in the form of pharmaceutical preparations, in spiritus ammoniæ aromaticus, for instance, but to the person who is accustomed to take alcohol by the pint or more daily a few drachms of spirit during the 24 hours is a negligible quantity.

Judging by the experience gained at the Dalrymple Home Retreat I am of opinion that delirium tremens, in the absence of surgical injuries or a disease such as pneumonia, is an avoidable complication when the patient can be kept under observation, and that under the same conditions those patients recover more rapidly whose liquor is stopped at once. I have admitted a few cases where delirium tremens had already just commenced, but with the exhibition of bromides in large doses and of hypnotics, among which chloral and paraldehyde are the most useful, sleep has been induced within 12 hours of admission. So that I cannot agree with the view which Dr. Hare is inclined to favour, that the best treatment of this condition is to withhold practically all drugs. The condition, in my opinion, requires energetic drug treatment.

I am, Sir, yours faithfully,

F. S. D. HOGG.

Dalrymple Home Retreat, Rickmansworth, April 13th, 1909.

HILLYER *v.* THE GOVERNORS OF ST. BARTHOLOMEW'S HOSPITAL.

To the Editor of THE LANCET.

SIR,—In reference to your report and comments on the above case may I crave the hospitality of your columns to tell all who may be interested that my solicitors have entered an appeal against Sir William Grantham's decision? By the help of friends I hope to make this a test case and obtain a legal ruling as to the liability of hospitals in such situations, for it must be admitted that this question is of grave importance not only to the authorities of hospitals but also to the general public who support these charities. May I add that I went into court under the impression that a jury would hear *all* the evidence and would be permitted to express their opinion?

I am, Sir, yours faithfully,

London, April 12th, 1909. WILLIAM H. HILLYER.

A CASE OF EXCISION OF THE SCAPULA.

To the Editor of THE LANCET.

SIR,—I was very pleased to read the letter of Mr. R. P. Rowlands in THE LANCET of Jan. 16th, calling my attention to a few discrepancies in my article on the above subject which was published in your journal of Jan. 9th.

In reply, I might state that my patient was able to abduct his arm voluntarily to an angle of 45 degrees, but on forced abduction to any degree beyond this limit he evinced much pain; but Mr. Rowlands's case was able to abduct his arm to a right angle only. It was originally the typist's error, when "90 degrees" were substituted for 45 degrees. Though the difference in the range of abduction in these two cases is only 45 degrees, yet I admit that every extra range of movement must certainly be of material advantage to any person. But the two cases under discussion are quite unlike each other: one was an enchondroma and the other a rapidly growing sarcoma. My subject was also able fully to flex, extend, and adduct his shoulder-joint, but internal and

external rotation were only possible to a small extent. It must be remembered that active and passive movements were not commenced till the twenty-ninth day after the operation owing to an attack of dysentery. Had these movements been commenced earlier he would have had a better range of abduction and internal and external rotation. When I said that the utility of the joint had not been impaired I meant that the patient had a joint fairly strong and mobile to enable him to carry on his work as a coolie. But it was never meant that his joint was as good as the normal one.

With reference to my objections to leaving the glenoid socket and the coracoid process in one mass in innocent growths of the scapula, while admitting that the radiograms and the photographs support Mr. Rowlands's contention, I think it is not wise to draw any definite conclusions from the results of a single case. We must collect more materials and compare their results before we make any definite statements. While I hold the above view for the present, I must candidly admit that Mr. Rowlands's case is very instructive, and I think every surgeon who gets a suitable case should perform the operation he advocates for the reasons mentioned in his instructive and excellent article published in the *British Medical Journal* of March 28th, 1908.

I am, Sir, yours faithfully,

H. B. MYLVAGANAM.

Bangalore, South India, March 13th, 1909.

NEWCASTLE-UPON-TYNE.

(FROM OUR OWN CORRESPONDENT.)

Annual Report of the Royal Victoria Infirmary.

THE Royal Victoria Infirmary was established in the year 1751 and the present report, dealing with the work of the infirmary for the year 1908, is the 158th since the foundation of the institution. The house committee point out that during the year the hospital was opened to its fullest extent. It will be remembered that the new buildings were opened by the King in July, 1906, and the work of the institution has gradually been transferred from its original home on the Forth banks. The occupation of the whole of the accommodation afforded by the buildings on the Moor Edge has, of course, led to a large increase in the number of patients treated and also to an increase in the ordinary expenditure. It is satisfactory to note that coincidently with an increase in the ordinary expenditure there has been an increase in the ordinary income, but the latter has not been sufficient to keep pace with the increased cost, so that the excess of expenditure over income is greater than it was in previous years. The house committee note that the cost per in-patient is less than in 1907 or 1906. "In order to meet the criticism that many patients are admitted into the hospital without sufficient care being taken to ascertain whether they are such persons as are entitled to receive the benefit of the charity, the house committee have appointed a subcommittee to consider the admission of patients. ..... During the present year they hope to collect figures and information to enable them to recommend some workable scheme which will solve to some extent this extremely difficult question." During the year several important changes have taken place on the staff. In August the resignation of Professor George Redmayne Murray was accepted with much regret and the house committee say that "during his tenure of office he has been distinguished for his courteous demeanour, profundity of knowledge, and devotion to the interests of the institution, and as a consequence has enjoyed the confidence and approbation of the committee and his colleagues and the gratitude of his patients." As I have already stated, Dr. Murray was appointed an honorary consulting physician to the infirmary on his accepting the invitation of the University of Manchester to become its professor of medicine. In March it was decided to appoint four assistant physicians instead of two as heretofore, and in November an honorary assistant was appointed to the ophthalmic department. As regards the finances of the infirmary, the total ordinary income in 1908 was £25,552 17*s.* This sum is larger than the figure for 1907 by £2683 0*s.* 10*d.* The subscribed income amounted to £21,588 2*s.* 1*d.*, which exceeded the income of 1907 by £3868 11*s.* 8*d.* The most interesting fact, probably, with regard to income is the increase in the workmen's subscriptions. In 1904 the workmen's contributions totalled £4762 13*s.* 2*d.* In 1908 this sum was trebled and amounted to £14,213 12*s.* 3*d.* The total ordinary expenditure amounted to £30,892 17*s.* 6*d.*, which exceeds the income for the same period by £5340, and is greater than the ordinary expenditure in 1907 by £3625 13*s.* The deficit at the end of the year 1908 is greater than the deficit at the end of 1907 by £942 12*s.* 2*d.* The cost per occupied bed, calculated on the total ordinary expenditure, was in 1908 £78 11*s.* 5*d.*, which is noticeably less than in 1907 and in 1906, when, on the same basis, the figures were £81 5*s.* 10¾*d.* and £81 5*s.* 1½*d.* respectively. When calculated upon the total ordinary expenditure, less the cost of out-patients and casuals, the cost per occupied bed was, in 1908, £74 14*s.* 6*d.*; in 1907, £77 5*s.* 10½*d.*; and in 1906, £75 17*s.* 7¾*d.* The number of patients admitted to the wards during the year was 7584, being 1103 more than in 1907, and the average daily number in the wards was 393·2, whereas in 1907 the average was 335·4, and in 1906, 251·8. The highest number in the wards on any one day was 425, which is the largest possible number which can be accommodated. In their report the house committee state that it is their endeavour, so far as possible, to limit the number of occupied beds to 400 "in order that a margin of 25 may be kept available for any emergency that may arise." The average length of stay of each in-patient is greater than in 1907 or in 1906, the figures being 19·16 days in 1908, 18·9 days in 1907, and 18·7 days in 1906. The number of out-patients and casuals was also increased. In the year under review 37,324 out-patients were attended to and 23,468 casuals, the total attendances in the out-patient department (indoor and outdoor) being 104,725.

April 13th.

WALES.

(FROM OUR OWN CORRESPONDENT.)

Poisoning by Zinc.

POISONING by zinc is sufficiently rare to merit record when instances do occur. An inquest was recently held at Newport on the body of a girl, 13 years of age, who had died after a short period of unconsciousness following on a supper of chipped potatoes purchased at a shop in the town. The county analyst found traces of zinc in the contents of the girl's stomach, and the same metal was also found in samples of oil used for cooking the potatoes and in the potatoes themselves. The cooking-pans were coated with an alloy containing zinc, so that it is probable the action of the oil together with the process of cleansing the pans had enabled the zinc to become incorporated with the potatoes.

The Question of a Public Slaughter-house for Merthyr.

A suggestion to provide a public slaughter-house in Merthyr appears to have caused some alarm among the butchers of the town. At a meeting of the local Master Butchers' Association recently held the secretary of the National Federation of Meat Traders' Associations declared that the inconvenience, the increased expenditure, and the risks involved in the use of a public abattoir had resulted in the firm determination of master butchers to go to the dead meat market rather than use a public slaughter-house. He also stated that wherever these existed they were white elephants and involved the ratepayers in a considerable financial outlay for which there was no adequate return. This assertion is not quite in accordance with statements which have been made in recent literature on the subject. In Mr. Christopher Cash's work[1] a list is given of public slaughter-houses which, in reply to his inquiries, were stated to be a financial success. At Belfast the profit is said to be £800 per annum, and at Edinburgh over £900, while in several places the absence of any profit on the undertaking is attributed to the existence of private slaughter-houses which cannot be got rid of.

Glamorgan Water Board.

The Bill which is being promoted in the present session of Parliament by the Glamorgan county council, having for its

[1] Our Slaughter-House System, by C. Cash, B.A. (George Bell and Sons, 1907).

main object the formation of a water board for the county, contains provisions empowering the board to purchase existing water undertakings. The largest of these in the county is that owned by the Pontypridd Waterworks Company which supplies the town of Pontypridd and about two-thirds of the Rhondda valleys. The principal gathering grounds of the company are at the head of the little Rhondda valley where there are storage reservoirs with a total capacity of 220,000,000 gallons. The supply has for some years been unsatisfactory, and one result of an action in the High Court brought by the Rhondda urban district council against the company in 1907 was an undertaking on the part of the latter to obtain Parliamentary powers for the construction of reservoirs in Breconshire. These powers were secured last year, and it is stated that terms have already been arranged for the transfer of the existing works and of the powers to construct others from the company to the water board in the event of the Bill of the county council becoming law.

Cardiff Medical School.

Although it is not at present possible to take the complete medical curriculum at the Cardiff College, the number of students from the Medical School who have already become qualified is 123. A great stimulus to the establishment of a Faculty of Medicine will no doubt be given by the recently issued report to the Treasury of the committee appointed to inquire into certain matters connected with the University of Wales and the Welsh University Colleges. Sir Donald MacAlister, President of the General Medical Council, who was a member of the committee, has appended a note to the report which has special reference to the Cardiff Medical School. He points out that the large international shipping trade of Cardiff makes it a natural centre for the study of tropical diseases, and he suggests that if a special school were organised in connexion with a completed medical department of the Cardiff College students and practitioners from other parts of the country would be attracted to it. He also expresses the opinion that Cardiff possesses all the requisites for a complete school of medicine, though he is careful to say that new buildings are a essential requisite, an assertion which no one will controvert.

Insanitary Structural Defects on New Vessels.

For several years past Dr. J. Howard-Jones, the medical officer of health for the borough, in his annual reports to the Newport port sanitary authority, has drawn attention to the hygienic defects which are to be found in quite new vessels, and the inspections which he made during last year disclose little, if any, improvement notwithstanding the fact that the vessels reported upon had been passed by the Board of Trade. In one instance the crew's quarters are described as little better than a hovel, so dark and so cut up into angular spaces that cleanliness was almost impossible. Such a dwelling, says Dr. Howard-Jones, would never be permitted by any sanitary authority to be occupied as a human habitation ashore. He further expresses the opinion that it is not at all surprising to find the type of man in our merchant service degenerating when sailors are compelled to live under such unsatisfactory conditions. From the record of nuisances and sanitary defects found during 1908 it appears that they were discovered in 13 per cent. of the 2593 British ships inspected and in 20 per cent. of the 994 foreign vessels. This proportion of defective conditions is higher than has been found in previous years both as regards British and foreign ships.

April 13th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Glasgow Maternity Hospital.

AT the annual meeting of the subscribers to the Glasgow Maternity Hospital the secretary of the institution showed that during the year in the various departments of the hospital the cases treated reached the large number of 4384. This is an increase of 210 cases in the indoor, 336 in the outdoor, and 98 in connexion with the Western Branch. Since the last annual meeting the new hospital has been opened and there is no doubt that it has the appreciation of the public and the confidence of the medical profession. It is satisfactory to note that the number of students enrolled has increased from 86 to 154 and that the pupil nurses have increased from 113 to 140. The financial statement shows that the expenditure for the year has exceeded the annual ordinary income by £1750.

Glasgow and West of Scotland Coöperation of Trained Nurses.

The sixteenth annual report of this association has just been issued and presents many points of interest. A coöperation such as this when well managed has proved a great boon to medical men and the general public of the West of Scotland, and has at the same time secured to nurses on the staff regular employment, adequate remuneration, and the advantages of a central home. The number of the nurses on the roll is 178. The number of cases attended during the past year was 1899, and the amount earned by the nurses £11,538. Since the establishment of the association in 1894 18,139 cases have been nursed and £108,039 have been earned. The system on which the scheme is worked is that at the termination of a case the nurse collects the fee and pays to the lady superintendent a percentage thereof, which is placed to the credit of a common fund out of which the yearly working expenses of the coöperation are defrayed. In the early years of the association 10 per cent. was contributed and this was afterwards reduced to 7½ per cent. During the year now completed the percentage has been raised. Nurses joining the coöperation pay 10 per cent. for the first two years, and after the first two years 7½ per cent. Nurses who have been seven years in the coöperation have the percentage reduced to 5 per cent. Nurses residing in the home when off duty make a quarterly payment of £1, which entitles them to sleeping accommodation, board being charged at the rate of 12*s.* 6*d.* per week or 2*s.* 6*d.* per day. A sick fund has just been inaugurated in connexion with the association and to this all the nurses contribute £1 per annum, with the exception of four who are already members of the Royal National Fund. A bazaar was held last year to help this sick fund and by means of it the sum of £3523 was raised.

Pathological Laboratory for Asylums in the West of Scotland.

A movement has been initiated for the establishment of a pathological laboratory in the West of Scotland on the same lines as the one at present in Edinburgh for carrying out pathological work in connexion with the asylums in the district. It is evident that the establishment of such an institution will undoubtedly be in the interests of medical science, but also in the interests of the patients in these asylums. The cost of carrying it on is estimated at £450 per annum, of which £300 would go in salary to the pathologist, the other £150 being applied to the various requirements of the institution. The committees of Woodilee and Gartloch Asylums under the Glasgow Lunacy Board have agreed to give an annual contribution of £50 each, and the directors of the Royal Gartnavel Asylum have promised to contribute handsomely to the scheme. It is expected that the remainder will be made up by the various other authorities interested.

The Municipalisation of the Sidlaw Sanatorium.

There is every prospect that the municipalisation of the Sidlaw Sanatorium will not be agreed to without a severe struggle. The matter was up for discussion at a meeting of the Harbur Trust on April 5th, when it was moved that the board resolve to oppose the town council acquiring the sanatorium. The Lord Provost, in reply, denied that the matter had been rushed. The ratepayers had not only been consulted but they had voluntarily sent representatives to urge upon the town council the advisability of acquiring the sanatorium. It was not proposed to treat more than 150 cases at any time. They were advised by their expert that in a year or two the city would be compelled to provide hospital accommodation for consumptives. They had an offer from the directors of a building that cost £25,000 and the offer of additional ground on very favourable terms. He thought that it would have been a mistake on the part of the council not to have jumped at the bargain. The motion was carried by 18 votes to 3. The Chamber of Commerce at its monthly meeting on April 6th resolved to oppose by counsel and agents the acquisition of the sanatorium by the town council on the following grounds—viz., that due consideration had not been given to the financial burdens which would thereby devolve upon the

community; that no reasonable opportunity had been afforded to the ratepayers to determine as to the advisability of such a step; and that sufficient information had not been furnished of the intentions of the town council in regard to the development of a scheme of such immense possibilities The secretary was instructed to intimate this resolution to the Harbur Trust and other public bodies with a view to joint action. Resolutions protesting against the scheme have been passed by several of the ward committees. It is believed that the Caledonian and North British Railway Companies will also take action. The Trades Council has unanimously decided to support the action of the town council.

University of Aberdeen: Graduation.

The spring graduation ceremony at the University of Aberdeen took place on April 6th in the Mitchell Hall, Marischal College. Principal Lang has been laid aside with illness for some weeks and Lord Strathcona came specially from London to preside in his place. This is the first occasion for a long period of years that a chancellor has fulfilled a like duty., Six gentlemen received the degree of M.D., one that of Ch.M., seven that of D.P.H., and 37 those of M.B., Ch.B. At the close of the graduation ceremony Lord Strathcona delivered a short address on patriotism.

April 13th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Tuberculosis Exhibition at the Rotunda Hospital, Dublin.

A TUBERCULOSIS Exhibition will be held in the Rotunda buildings on April 20th to 22nd under the presidency of Her Excellency the Countess of Aberdeen. Preliminary meetings for the purpose of making arrangements were held in the Rotunda on the 5th and 7th of this month. At the former it was proposed by Mr. Fletcher and seconded by Mr. E. H. Tweedy:—

That a small committee, consisting of the officers of the exhibition and the Central Tuberculosis Committee, the Women's National Health Association, and those in charge of the sections, with power to add to their number, be hereby formed to make arrangements.

Dr. M. F. Cox and Mr. John Mooney were appointed honorary treasurers, Dr. T. Donnelly, Dr. E. M. Fannin, and Mr. T. C. Harrington, M.P., honorary secretaries, and at the following meeting of the executive committee (on April 7th) the various sections of the exhibition were allocated to managers and subcommittees as follows: Pathological Section: Professor E. J. McWeeney. Veterinary Section: Mr. C. Allen, Mr. A. Watson, and Mr. J. Wilkinson. Statistical Section: Sir R. E. Matheson. Literature Section: Dr. A. G. Boyd. Appliances Section: Sir W. J. Thompson. Hygiene Section: Mr. George Fletcher, Dr. R. J. Rowlette, and Professor F. T. Heuston. Food Section: Professor W. H. Thompson. Domestic Science Section: Mrs. Rushton, Miss Fletcher, and Miss McNeill. Her Excellency then announced that Dr. E. W. Hope, superintendent medical officer of health of Liverpool, would deliver a lecture on Tuesday, April 20th, and that Dr. Philips would lecture on the following evening. It was also decided that popular lectures should be delivered every evening, and that demonstrations of exhibits should be given frequently during the day.

Benn Ulster Eye, Ear, and Throat Hospital.

From the annual report presented at the meeting of the supporters of this institution on April 8th it appears that 3539 new patients were treated during 1908, while 340 were taken into the wards. Over 60 operations for cataract were done during the year. The debt on the hospital has been increased to £244 5*s.* 5*d.* Special reference was made to the much regretted death of Dr. R. Allen, one of the assistant surgeons, in whose place Dr. Henry Hanna has been appointed; while Dr. Isaac A. Davidson and Dr. J. McCredy have been appointed clinical assistants and Dr. F. C. Smyth anæsthetist.

The Belfast Health Commission.

The Local Government Board (advised by the Law Officers of the Crown) has demanded from the city corporation of Belfast the sum of £1431 10*s.* 10*d.* for the cost of the late Health Commission. Two counsel advise the corporation that it is not liable for the sum of £608, being the amount paid respectively to the chairman and two other members of the Commission who were not officials of the Irish Local Government Board. The matter is under consideration; the two counsel representing the corporation, in the meantime, are to look into the advice of the Crown law officers, as given to the Local Government Board.

Overcrowding of Ulster Asylums.

From the tenth annual report of the Monaghan and Cavan Lunatic Asylum it appears that there were 858 inmates (460 men and 398 women). 179 were admitted during the year, and the total number under treatment during the year was 1030. The numbers remaining at the close of the year were 33 more than those in the house at the close of the previous year. The new detachable block to accommodate 120 patients has been occupied since April last, and even with this accommodation utilised there are still 89 patients in excess of the legitimate space. At the monthly meeting of the Tyrone and Fermanagh Asylum, held on April 8th, the question of providing additional accommodation to relieve the overcrowding in the house was again under consideration but was adjourned.

April 13th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Foreign Bodies Removed from the Œsophagus.

AT a meeting of the Society of Medicine held on March 27th M. Guisez showed 18 foreign bodies which had been removed from the œsophagus by œsophagoscopy, such as pieces of bone, fish bones, coins, buttons, and at least five artificial tooth plates. Thanks to instrumental perfection and the employment of dilating tubes, the extremity of which can open and protect the walls of the œsophagus at the moment of extraction, operation during the last two years has been invariably successful.

Poisoning by Subnitrate of Bismuth.

M. Léon, at a meeting of the Hospitals Medical Society held on March 27th, drew attention to certain risks which might occur from the use of bismuth subnitrate as laid down by the new Codex. The subnitrate of the Codex of 1884 contained 17 per cent. of nitric acid, while that of the new Codex contains 24 per cent. If these two different preparations of bismuth are acted upon by a hyperacid gastric juice, the bismuth salt from the new Codex forms a solution of nitric acid twice as strong as that from the old Codex. M. Léon suggested the employment of a neutral subnitrate prepared by washing the acid subnitrate in boiling water containing some carbonate of sodium. The salt thus obtained only contained some 4 per cent. of nitric acid.

Injections of Strophanthin.

At the same meeting of the same society M. Vaquez and M. Lecomte communicated a paper in which they said that they had obtained excellent results in cardiac insufficiency by injecting one milligramme of strophanthin into the veins every two or three days. The asystoly lessened, the œdema disappeared, copious diuresis was set up, and the dilated heart returned to its normal dimensions. While recognising the dangers which might occur by this method of medication, the two observers said that it should not be neglected altogether, but that it should be employed only in cases where other drugs have been without results. Only very small doses should be used and in case of renal insufficiency the condition must not be due to a definite affection of the kidneys.

The Use of Cerebral Extract in Nervous Maladies.

At a meeting of the Academy of Medicine held on March 30th M. Page said that he had been using extract of cerebral substance in cases of nervous disease. Constantin Paul had already employed this method but with very variable results. He used an extract of the whole brain of the sheep. M. Page uses an oily extract (*extrait gras*) which according to him contains an antitoxin. The effect of injecting this substance is to influence the arterial pressure and to diminish the amount of phosphates excreted in the urine. At the same time the appetite of the patient improves, he puts on flesh, and his strength is increased. In 20 cases in which this method of treatment was used, mostly those of neurasthenia, the length of treatment occupied only half the time of the usual methods.

The Treatment of Gout by Puncture of the Articulations.

At a meeting of the Therapeutical Society held on March 24th M. Lumière and M. Gelibert communicated a paper in which they said that for the last five years they had systematically used puncture in the case of all large gouty joints which were the seat of an effusion, more especially in the knee. They had obtained the following results. On the one hand the pain rapidly disappeared, the temperature fell to normal, and the attack was notably shortened; on the other hand, the fluid drawn off contained no appreciable quantity of uric acid or of urates. It was, however, extremely poisonous and brought about a marked rise in the temperature. These observations put into the hands of the physician a new curative method at once simple, rapid, and efficacious, and they introduced quite new ideas into the pathogeny of gout, especially as concerns ideas held up to the present as to the rôle played by uric acid in the gouty diathesis.

A Parasite of the Vine and Cancer.

At a meeting of the Academy of Sciences held on March 29th M. d'Arsonval related some interesting experiments originally begun by Charrin and carried on by M. le Play. By injecting a certain parasite from the vine into the peritoneal cavity of animals M. le Play found that he brought about the growth of tumours the aspect of which closely resembled that of a cancerous growth. The parasite localised itself in the liver. If it were injected into the blood-stream its vitality was diminished, but sooner or later it always infected the liver, which appears to be its chosen habitat.

Opium in Madagascar.

At the instigation of the Governor-General of Madagascar the Colonial Minister has just issued a decree for strictly regulating the importation, sale, or storage of opium in that colony. A decree of August 31st, 1908, had already forbidden the existence of opium-smoking dens, but it was found to be useless unless the authorities could exercise some control over the importation of the drug.

Shakespearian Toxicology.

For the most part the heroes and heroines of Shakespeare, when they do die, perish by a violent death, and Dr. A. Cartaz has been studying the methods of these deaths. The ghost of Hamlet's father revealed to his son that he, the father, had died from *jus de jusquiame* (juice of cursed hebenon). Dr. Cartaz argues that henbane juice, unless some other and corrosive substance is added to it, could not have such a fatal effect. Moreover, whatever hebenon may mean, whether it be henbane or yew or broom, poisoning by way of the ear is hardly possible, and so Dr. Cartaz says that (to produce the effect described) the poison must have been given either at the same time or before by the mouth. Possibly the word hebenon is used in the generic sense of any poison bringing about confusion and dulness of the senses. This explanation, however, does not help us to understand how the poisoning can be produced by dropping it into the ear. As regards the slumber of Juliet Dr. Cartaz thinks that Friar Lawrence used mandragora to put that heroine to sleep, but he is astonished that the slumber lasted so long, and he thinks that some hypnotic influence must be invoked in addition to the poison.

April 12th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Infective Agent of Trachoma.

Professor Greef of Berlin, writing to the *Deutsche Medizinische Wochenschrift*, reports that he has detected the infective agent of trachoma. These bodies are small and round, much smaller than the smallest micrococci hitherto known. They may be stained very strongly after Giemsa's method but not after Gram's method, and appear sometimes more violet, sometimes more reddish. They are surrounded by a distinctly light circle; and under the highest powers it is seen that they are not circular but more oval like bacteria with rounded edges and they tend to congregate like diplococci. In the later stages of the disease they are present in crowds within the cells. They were found in the follicle, both within and without the cells, in the epithelium, and in the discharged fluid. By using other diseases of the eyes and normal eyes as controls it was ascertained that the above bodies were not present except only in trachoma. The demonstration of these bodies is difficult and the procedure described by Professor Greef is rather complicated. Fresh cases without previous treatment must be taken, the bodies in question being no longer visible after some days' treatment by caustics. They have by that time disappeared from the superficial layers of the tissues but continue to be present within the deeper layer where they increase and produce relapses.

Diabetes in Infants.

At a recent meeting of the Verein für Innere Medicin Dr. Langstein read a paper on Diabetes in Infants. He showed a baby eight months old without any apparent morbid condition. The child was quite well till the age of six months when the temperature rose and slight digestive troubles developed. The mother afterwards remarked that the napkins moistened by the baby's urine became stiff, and that the child had an enormous thirst. On examination the urine showed 3·5 per cent. of sugar which was not galactose but glucose, so that the case proved to be really diabetes. The daily quantity of urine was on an average 880 grammes, containing 66 grammes of sugar. The patient was accordingly fed by a milk specially prepared as follows. The casein and fat of one and a half litres of ordinary milk were precipitated by rennet essence, the sugar was then removed by washing the coagulated mass, and the latter was then pressed through a fine sieve into a mixture of 200 grammes of whey and 1300 grammes of water. The mixture obtained in this way contained only eight grammes of sugar, but much fat and albumin, and saccharin was added to make it palatable. By the administration of the above mixture the daily quantity of sugar in the urine decreased to eight grammes. Concerning the etiology, it is remarkable that the mother had given to the baby since the sixth month daily 200 grammes of sugar. Cases of diabetes in infants are very rare; and many of the instances described in the medical literature are probably not to be trusted.

The Relation between the Hypophysis Cerebri and Ovaries.

Dr. Thumim recently reported the case of a woman in whom after irregularities and eventually complete cessation of menstruation the first symptoms of acromegaly developed. The patient, a singer, had lost her voice, but on laryngoscopical examination only an increase of the thyroid cartilages was observed. An acromegalic condition developed, and by radiography an alteration of the sella turcica was ascertained. Hypophysis cerebri was administered in tablet form without success, but the disease has not of late progressed. The ovaries were found to be atrophic, and Dr. Thumim suggested that this atrophy had produced a hypertrophy of the hypophysis cerebri leading to acromegaly.

The Medical Women of Berlin.

The medical women of Berlin have recently formed an association of their own. They intend to establish a hospital of which the staff will consist exclusively of women and include wards for the indigent classes, together with paying wards for well-to-do patients. The number of medical women has increased in Berlin since women were admitted to the State examination and so obtained an opportunity to become duly qualified. Nearly every one of the numerous medical societies of Berlin now includes medical women although their active part in the proceedings is not marked. In the recent medical directory 26 medical women are registered in Berlin apart from those ladies who previously to the admittance of women to the German examination have taken their degree in Switzerland and practise under that diploma.

April 12th.

DONATIONS AND BEQUESTS.—Mr. Conway Rose of Chard, Somerset, has forwarded £1000 to the committee of the Royal Alexandra Hospital, Rhyl, towards the building fund for a new wing.—The trustees of the late Hon. Sheriff Anderson have intimated to the board of the Hawick Cottage Hospital that they will give a donation of £500 for the building and furnishing of another private ward to be named the Anderson Ward.

Obituary.

ARTHUR GAMGEE, M.D. EDIN., F.R.C.P. LOND., F.R.S.,

EMERITUS PROFESSOR OF PHYSIOLOGY, VICTORIA UNIVERSITY, MANCHESTER.

MANY friends of Dr. Arthur Gamgee, both in this country and abroad, where he was widely known, will hear with the deepest regret of his unexpected death in Paris on March 29th. This was due to congestion of the lungs following an attack of influenza. His journey to Paris, destined to end so sadly, was undertaken in order to meet his life-long friend Professor Hugo Kronecker of Berne, who, on finding him so ill, arranged for his removal into the nursing home where he died, though fortunately not before his wife and daughters had reached Paris. He was in his sixty-eighth year.

Dr. Arthur Gamgee was born in 1841 in Edinburgh, and was the younger son of Joseph Gamgee, a distinguished veterinary surgeon and pathologist, whose researches, particularly those with regard to rinderpest, attracted a large amount of notice both in England and on the Continent. His elder brother, Joseph Sampson Gamgee, whose life-work came to be so closely associated with the Birmingham General Hospital, was an exceptionally brilliant man, a facile linguist, a fluent speaker, a lucid writer on medical subjects, who acquired a great surgical reputation, especially by the introduction of improved methods for the treatment of wounds in the days when even the word bacteriology was unknown. This brother died in his fifty-ninth year in 1886.

Educated at University College School, Arthur Gamgee was entered as a medical student at Edinburgh University. Here at the outset of his life he showed a special interest in physiological work, particularly in physiological chemistry, as is evidenced by his inaugural thesis on "Contributions to the Chemistry and Physiology of Fœtal Nutrition," to which the medical faculty of the University of Edinburgh awarded a gold medal in 1862. A reprint of this, his first published work, may be found in the *British and Foreign Medico-Chirurgical Review*.[1] From 1863 to 1869 he held an appointment under Dr. Maclagan, who was professor of medical jurisprudence in the University, but his natural leanings were towards scientific research, and numerous papers, of which the most interesting are those on the Action of Nitrites on Blood (1868), and with J. Dewar on the Constitution and Physiological Relations of Cystine (1871), gave evidence of his marked ability to investigate abstruse problems in physiological chemistry. In the first of these papers he described elaborately every important point in the history of methæmoglobin, its crystalline shape, its power of absorbing and retaining oxygen—facts rediscovered years later by Hüfner. Gamgee was only mistaken in not recognising that other agents besides nitrites exerted the same action on hæmoglobin. The research on cystine was no less important, though the actual constitution determined for this amino-acid has undergone some modification by the subsequent researches of Friedmann. In 1872 Dr. Gamgee was elected to the Royal Society. His age at that time was 31, and a year later he became the first Brackenbury Professor of Physiology in the Owens College, Manchester. His connexion with Manchester, during which time he shared the work of those who were actively striving for a charter which should convert the College into the Victoria University, lasted for 12 years, and it is during this period that Gamgee, by his enthusiasm, his tireless energy, and sound judgment of the real relations which should subsist between those who teach and those who learn, accomplished what will prove to be the best remembered work of his life. As dean it fell to him to found the school in his own subject, and his output of original work in physiology and pharmacology during that time has never since been approached. His own attitude as a teacher may be gathered from his introductory address in 1883, 22 years after the foundation and ten years after the removal of the College from Kay-street to the present site, where he says that "popular courses of lectures cannot in any sense constitute academic teaching. ..... But the governors and professors were imbued with the spirit that the College which they were fostering must above all and before all be a place where learning is studied and taught for its own sake; and that in order to exert that influence, which great academic institutions have exercised in the past, it must be not merely a place where routine teaching is carried out, but a centre in which learning is added to by the labours of those who teach—a place of research, a centre of light. No university ought to be imbued with a purely utilitarian view of education."

Looking back on that period it can be clearly seen that Owens College numbered among its professors men who made the College famous all over England—Roscoe, Balfour Stewart, Stanley Jevons exerted an immense influence throughout the country. In our own quieter times it is difficult to realise that these men were, together with Huxley and Tyndall, the real pioneers who unceasingly laboured, and successfully laboured, to place the study of science on a level with the teaching of the older universities. In this connexion it is worth remembering that not only by the publication of primers and elementary text-books, but by the courses of evening "Science Lectures for the People," which were almost entirely due to Sir Henry Roscoe, those who had the best interests of science at heart were actually engaged in slowly convincing a hostile majority that the knowledge obtained by experimental work was of vital importance to the country. These lectures, initiated in 1866, continued until 1880 and were given by Huxley, Tyndall, W. K. Clifford, W. Pengelly, Spottiswood, Sir Norman Lockyer, and others, as well as by those more closely connected with the Owens College. The real value of this work, in which science instruction was given in a plain but scientific form, can scarcely be overestimated, for the object of these popular lectures was to arouse an interest in the study and pursuits of science, rather than to convey a large amount of information. Indeed, at that time science had to fight both for existence and recognition.

This short tribute to those to whom the early success of the Owens College was due enables us to see clearly the environment of Dr. Gamgee while at Manchester. The work by which he will be chiefly remembered was done during those years and with the rest he loyally worked for the success of his College. The science of physiology in this country was practically non-existent until 1873. It is quite true that there were physiologists, and some of these of European reputation, but the subject was neither taught nor studied in the only way that is possible, by experimental methods. Prior to this date there was a single professor of physiology in England. A history of the rapid growth of this science, the British school of which now takes rank with that of any on the Continent or in America, cannot be given here, but two publications—the "Handbook of the Physiological Laboratory," by Brunton, Klein, Burdon Sanderson, and Michael Foster, which appeared in 1873, and in particular the "Text-book of Physiology," by Foster in 1877—completely revolutionised the existing conceptions as to the scope and value of this science. The teachers of physiology at Cambridge, University College, London, and the Owens College were really the three men who by their influence primarily attracted students to their laboratories in which the real study of physiology was carried out. Instead of vague unmeaning speculations which filled page after page of older books, the subject, in the hands of Burdon Sanderson, Foster, and Gamgee, under the influence of Carl Ludwig, Kühne, and Hoppe-Seyler, became a laboratory study, and one which it was clear could only be advanced by the application of accurate chemical and physical methods to physiological problems. In this development Dr. Gamgee took his part, and rapidly showed that he possessed a richly endowed mind, a scholarly interest in his subject, and an exceptional knowledge of physical and chemical methods. As Brackenbury professor, as Fullerian professor of physiology in the Royal Institution from 1882 to 1885, as a frequent lecturer in Manchester and in London to popular audiences, his energy and enthusiasm found full play. In 1882, the year in which science had to suffer the loss of Charles Darwin, and, from an accident in the Alps, of F. M. Balfour, Dr. Gamgee was president of the Biological Section of the British Association which met at Southampton, where Dr. C. W. Siemens succeeded Lord Avebury as president. It was the year that the late Professor Moseley lectured on "Pelagic Life" and Lord Kelvin on "Tides and Tide Calculating Machines."

[1] London, 1864, vol. xxxiii.

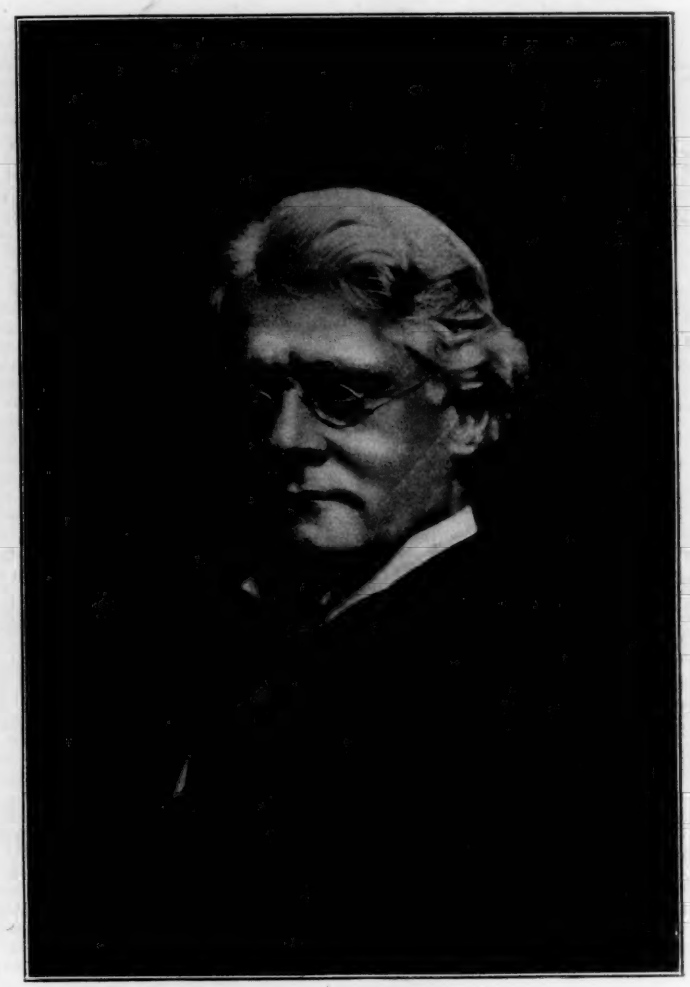
Dr. Gamgee chose for his address the Growth of our Knowledge of Secretion, and it is certainly one of the most erudite and masterly expositions of this part of physiology which have ever been written. It fell to his lot to speak of the loss of Darwin and also of Balfour, who, like Mayow, Bichat, Gerhardt, and W. K. Clifford, died before he was 40. In this address we also learn of the influence which John Goodsir exercised upon his early work, a teacher for whom he had the warmest affection. It has long ceased to be possible to judge of the religious belief of any man by his manner of life or even his attitude towards orthodox religion, and it is therefore of interest to quote from this address where Dr. Gamgee refers to Darwin: "It is impossible to study the writings of Darwin, and especially that one in which he treats of the 'Descent of Man,' without recognising an undercurrent of reverent sentiment which in one or two places finds expression in words telling us that man differs from the animal creation if not in physical characteristics which cannot be bridged over, at least in moral attributes and in 'the ennobling belief in God' by his power of forming that conception of the Deity which to use Darwin's own words is 'the grand idea of God hating sin and loving righteousness.'"[2] To quote further from this address, which contains so much that enables us to understand Dr. Gamgee's views, after pointing out that Goodsir was mistaken in some of his ideas as to the function of cells in the process of secretion, he pays a tribute to his teacher whose mind he regarded as resembling that of Johannes Müller. He says: "Goodsir was a master who, if judged by the low standard of fitness to instruct the great majority of his pupils in such a manner as to enable them to successfully pass examinations, would occupy no exalted position. He possessed, however, the far rarer power of instilling into the minds of the best of his pupils that love of original inquiry and that deep regard for truth which are the chief incentives to all scientific research of any value."

It was during his years at Manchester that Dr. Gamgee translated Hermann's "Lehrbuch der Physiologie." This translation from the fifth German edition came out in 1875. A second edition with additions and illustrations appeared in 1877. His greatest work, however, beyond doubt, and one which was destined to make Dr. Gamgee's name widely known, was the "Text-book of the Physiological Chemistry of the Animal Body, including an Account of the Chemical Changes occurring in Disease." The book, published in 1880, was dedicated to Sir Robert Christison, the author, in offering his tribute of admiration and regard, stating that "This intention has always been present with me, and this thought has added pleasure to what has truly been a congenial task." This volume involved an immense amount of original research and patient work, and though nearly 30 years have elapsed it still remains a solid monument to Dr. Gamgee and a lasting credit to British physiology. In its treatment of the subject it stands quite alone, unassailable as one of the most painstaking and originally conceived works in scientific literature. It is true enough that no one could have foreseen the immense development which organic chemistry has undergone. It is doubtful whether the advances made in organic and physical chemistry during the last two decades will be paralleled in another quarter of a century. Then physical chemistry was almost non-existent, organic chemistry was in its infancy, and synthetic chemistry was being founded by Berthelot. But the value of this work is in no way impaired by subsequent researches. It was, and will continue to be, the best exposition of the subject as this appeared to the author, a book strictly concerned with physiological chemistry as contrasted with organic chemistry that has a physiological bearing. The subject is treated from the point of view of the biologist and physician rather than the chemist, the arrangement of the subject is physiological rather than chemical, and for the first time a book was produced in the English language available both for the study and the laboratory. Marked literary excellence characterises the book: it is able to be easily read by students or by teachers. Above all, the value of accurate experimental work comes out on almost every page; as one of those who reviewed the book has said, the author has kept before him the saying, "*Chymia egregia ancilla medicinæ, non alia pejor domina.*" In 1880 the importance of chemical research in the direction of an aid to pathology was almost unknown, and this book was at once an indispensable and exhaustive contribution to English science and medicine. A second volume which constituted an independent and complete treatise on the "Physiological Chemistry of Digestion" appeared 13 years later. This, like its predecessor, was written not so much from the standpoint of a pure chemist as from that of a physiologist; all parts of the subject which are of interest to the pathologist, pharmacologist, and the scientific physician are treated with especial care. That part of the volume which deals with the bile, jaundice, and the formation of gall-stones stands out with particular clearness on account of its excellence. While engaged on this volume the author continued to collect papers and re-wrote the first volume which was out of print. The whole work, though incomplete, remains as evidence of the thoroughness which almost amounted to pedantry with which Dr. Gamgee carried out his work; his industry, his single-heartedness of purpose, and his absorbing love of scientific research can be appreciated from these two books. By these he will be remembered, for his numerous original papers are naturally only known to comparatively few students.

In 1885 Dr. Gamgee left Manchester, was appointed assistant physician at St. George's Hospital in 1889, and lectured on pharmacology and materia medica in the medical school. He resigned from ill-health, resumed his scientific work in Cambridge, finishing later in Berne the second volume of the "Text-book of Physiological Chemistry." He determined to work and live abroad, practising as a consulting physician first at Lausanne and subsequently for several years at Montreux. In his spare time he worked actively on those absorption bands of hæmoglobin and its derivatives which are to be found in the ultra-violet portions of the spectrum (Soret's bands). While at Montreux, where he fitted up a laboratory in the basement of his house, he continued those researches which were to form the substance of his Croonian lecture before the Royal Society in 1902, on Certain Chemical and Physical Properties of Hæmoglobin. This subject, treated so admirably, had been the design of his investigations for years, and we must still look to his contribution to Schäfer's "Text-book of Physiology" for the most exact and painstaking account of "Hæmoglobin: its Compounds and the Principal Products of its Decomposition," which exists in English or, indeed, in any other language. In his researches on the blood pigment he demonstrated that this, like silicic acid, could exist in a colloidal state, hæmoglobin falling as a red cloud through a colourless liquid in the anodic compartment of an electrolytic cell. It is in this colloidal state that hæmoglobin probably exists within the red corpuscles. Other facts first discovered by Dr. Gamgee are the paramagnetic behaviour of hæmin and the dextro-rotatory properties of hæmoglobin.

In the autumn of 1902 Dr. Gamgee was invited to America, visiting the laboratories of New York, Baltimore, Philadelphia, and Harvard. The purpose of this visit was to enable him to take a complete survey of our present knowledge of nutrition. The difficulties in the way of completing this work were far beyond what he had anticipated, and his medical work at Montreux had grown so as to leave him but little time for a work, which could only be done with assistance and in proximity to a thoroughly equipped library. In the spring of 1903 he revisited America, previous to which he had just received the Hon. LL.D. of Edinburgh, a city which he loved more than any in the world and one which gave him a warm welcome on this occasion. From the time of his return to Switzerland his scientific work begun there, and subsequently carried out at Cambridge and in the Physiological Laboratory of the University of London, was concerned with the realisation of an idea conceived much earlier—the continuous registration of the variations in temperature of the animal body. By means of a photographic recorder a continuous registration, and by the thread-recorder devised by Mr. Horace Darwin a quasi-continuous record, can be obtained by the use of thermo-electric couples and thermostats which are capable of being maintained at an absolutely constant temperature. Dr. Gamgee's last published paper in the *Philosophical Transactions* of the Royal Society in 1908 contains a full account of the methods which he had devised for studying the fluctuations of the body temperature in health and disease, together with a full account of the history of medical thermometry from the time of Sanctorius

[2] Descent of Man, second edition, p. 144.



ARTHUR GAMGEE, M.D. EDIN., F.R.C.P. LOND., F.R.S.
(From a photograph by Messrs. Elliot and Fry.)

to the present day. This idea of being able to graphically register temperature variations was solved by Dr. Gamgee, and this work he believed in the future was likely to play an important part in the diagnosis and treatment of disease. And it is certain that if the records of temperatures taken several times a day with thermometers are of value, a fact traversed by no one, then a practical method for registering the diurnal curve of temperature must be of far-reaching importance, and doubtless there is a wide field of research open to those who will employ such a method as an adjunct to clinical study. An advance in method which has reference to the general metabolic processes of the body cannot fail to add to our knowledge of the phenomena both of health and of disease.

In 1908 Dr. Gamgee received the Hon. D.Sc. of the Victoria University and most eulogistic references to his work were made by the Principal. "An interpreter of the work of German physiologists, he has as an investigator long since repaid the debt to his brethren of that nationality, who in their turn are now glad to have at their command and in their tongue the records of his life-long researches, and I claim that no one has shown greater skill or a more subtle genius in the field of research than the physiologist whom I bring before you." Last year he represented the Royal Society on the occasion of the celebration of Haller's bicentenary at Berne, and during the last few months he was actively engaged in furthering the success of the International Congress of Applied Chemistry, which meets in London on May 27th. He was vice-president of the Physiological Chemistry Section.

Men like Professor Arthur Gamgee are difficult to place in any exact order in the hierarchy of physicians. His clinical work was dwarfed by the range and intensity of his scientific labours, and these, in their turn, were so original that their scope and value could not be immediately estimated by his medical colleagues. In our view Gamgee's resolute intention to make his research work have a practical bearing upon pathology, pharmacology, and therapeutics generally (see the complete bibliography of his writings appended to this notice) secures for him an extraordinarily high place among the leaders of medicine, a place which later development in our science will only serve to confirm or even further to elevate. He was an excellent linguist, possessed of a most retentive memory, a thoughtful student of the history of many branches of science, and an excellent classical scholar. Quoting from his favourite author, we may say of him: "Nonne vobis videtur animus is, qui plus cernat et longius, videre, se ad meliora proficisci; ille autem, cujus obtusior sit acies, non videre?" He preserved throughout his life his enthusiastic love for scientific work, which led him to give his time ungrudgingly to research, and he dwelt in the atmosphere which envelops those who care for knowledge for its own sake. Art, literature, science, each demands much of a man. To science Dr. Gamgee devoted his life. In return for this, in his work and in the affection, not only of his own family, to whom he was so dear, but in the genuine affection which so many felt for him, he must have had his reward. To those who knew him intimately, could understand his aims, his single-heartedness, and the complete simplicity of his nature, which was almost like that of a child, his loss has been severe. Of a most affectionate disposition and of a sanguine temperament he may not always have chosen to display these qualities to others. He has not lived to complete his work; it was ordained otherwise. In 1875 he married the daughter of Mr. J. Proctor Clark. This lady and two daughters survive him, and to them we offer our deep sympathy in their bereavement.

BIBLIOGRAPHY.

Systematic Works by Dr. Gamgee.

Hermann's Elements of Human Physiology. Translated and edited from the fifth German edition; Smith & Elder, 1875. The same book, with additions and illustrations; second edition; Smith & Elder, 1877. Text-book of the Physiological Chemistry of the Animal Body, including an Account of the Chemical Changes occurring in Disease, vol. i.; Macmillan & Co., London, 1880. This book is in no sense a compilation, but teems with the original researches of the author. If an example were needed, the section on "Pseudo-cerebrin" might be cited, this body having been acknowledged by Thierfelder to be identical with the body called "cerebron," which he separated much later. Text-book of the Physiological Chemistry of the Animal Body, &c., vol. ii. The Physiological Chemistry of Digestion. A German edition of this book translated by Professor Leon Asoher and revised by Professor Drechsel was published by Deuticke of Vienna and Leipsig, and has been largely sold, read, and quoted in Germany. Presidential Address to the Biological Section of the British Association at Southampton, August 24th, 1882; British Association Reports, 1882, pp. 554–573. On the Physiological Chemistry of Digestion, 1 vol., Health Exhibition Handbooks on Digestion, of which the general preface was also written by Dr. Gamgee.

The Earlier Writings of Dr. Gamgee.

1. On Experiments Confirmatory of those of Kühne on the Non-existence of Ammonia in Blood, British Association Reports, vol. xxxv. (1865), p. 107. 2. On the Action of Carbonic Oxide on Blood, British Association Reports, vol. xxxvi. (1866), p. 91. 3. On Poisoning by Carbonic Oxide Gas and by Charcoal Fumes, Journal of Anatomy, vol. i. (1867), pp. 339–346. 4. Researches on the Blood—On the Action of Nitrites on Blood, Philosophical Transactions, vol. clviii. (1868), p. 339, Comptes Rendus de l'Académie des Sciences, vol. lxviii. (1869), p. 730. 5. Note on the action of Nitric Oxide, Nitrous Acid, and Nitrites on Hæmoglobin, Proceedings of the Royal Society of Edinburgh, 1869, pp. 109–112. 6. On the Heat Generated in the Blood in the Process of Arterialisation, Papers I. and II., British Association Reports, vols. xl. and xli. (1870 and 1871), (pp. 228–232 and pp. 137-143 respectively). 7. On the Specific Heat of Blood, Journal of Anatomy, vol. v. (1871), pp. 139–141: 8. Arthur Gamgee and J. Dewar: Researches on the Constitution and Physiological Relations of Cystine, Journal of Anatomy, vol. v., 1871, pp. 139–141. 9. Same Authors: On Cystine, Proceedings of the Royal Society of Edinburgh, vol. vii. (1872), pp. 201–205. 10. Arthur Gamgee and J. Matthews Duncan: Notes on Some Experiments on the Rate of Flow of Blood and Some Other Liquids through Tubes of Narrow Diameter, Journal of Anatomy, vol. v. (1871), pp. 150–157; and Proceedings of the Royal Society of Edinburgh, vol. vii. (1872), pp. 145–163. 11. Some Old and New Experiments on the Fibrin-ferment, Journal of Physiology, vol. ii. (1880), pp. 145–163. 12. Arthur Gamgee and John Priestley: Concerning the Effects on the Heart of Alternate Stimulation of the Vagi, Journal of Physiology, vol. i. (1879), pp. 39–59. 13. Arthur Gamgee and Leopold Larmuth: On the Action of Vanadium on the Intrinsic Nervous Mechanism of the Frog's Heart, Journal of Anatomy and Physiology, vol. xi. (1877), pp. 235–250. 14. Arthur Gamgee, Leopold Larmuth, and John Priestley: On the Difference in the Poisonous Activity of Phosphorus in Ortho-, Meta-, and Pyro-phosphoric Acids, Journal of Anatomy and Physiology, vol. xi. (1877), pp. 273–284. 15. Same Authors: On the Action of Pyro-phosphoric Acid on the Circulation, Journal of Anatomy and Physiology, vol. xi. (1877), pp. 273–284. 16. Arthur Gamgee and Ernst Blankenhorn: Ueber Protagon, Zeitschrift für Physiologische Chemie, 1879, vol. iii., p. 260; Chemische Berichte, 1879; and Journal of Physiology, vol. ii. (1880), pp. 113–131. 17. A Note on Protagon, Proceedings of the Royal Society, vol. xxx. (1880), pp. 111–113.

The Later Writings of Dr. Gamgee.

18. On the Absorption of the Extreme Violet and the Ultra-Violet Rays of the Solar Spectrum by Hæmoglobin, its Compounds, and certain of its Derivatives, Zeitschrift für Biologie—Jubelband zu Ehren von W. Kühne; München and Leipzig, 1896, see pp. 505–528. This paper is illustrated with three plates. An abstract of the same paper was published under the same title in the Proceedings of the Royal Society, vol. lix. (1896), p. 276. 19. Hæmoglobin: its Compounds and the Principal Products of its Decomposition, Schäfer's Text-book of Physiology, vol. i., pp. 185–260. 20. On the behaviour of Oxy-hæmoglobin, CO-Hb, Methæmoglobin, and certain of their Derivatives in the Magnetic Field, with a Preliminary Note on the Electrolysis of the Hæmoglobin Compounds, Proceedings of the Royal Society (1901), p. 503. 21. The Croonian Lecture on certain Chemical and Physical properties of Hæmoglobin, Proceedings of the Royal Society (1902), vol. lxx. 22. Arthur Gamgee and A. Croft Hill: Ueber die optische Activität des Hæmoglobins und des Globins, Hofmeister's Beiträge zur Chemischen Physiologie und Pathologie, Band IV. (1904), S. 1–9. 23. Arthur Gamgee and Walter Jones: Ueber die Nukleoproteide des Pankreas, der Thymus und der Nebenniere, mit besonderer Berücksichtigung ihrer optischen Activität, Hofmeister's Beiträge, &c., Band IV. (1904), S. 10–22. 24. On Methods for the Continuous (Photographic) and Quasi-Continuous Registration of the Diurnal Curve of the Temperature of the Animal Body, Philosophical Transactions, Series B, vol. cc. (1908), pp. 219–240.

CLAUDIUS GALEN WHEELHOUSE, F.R.C.S. ENG., LL.D. MCGILL, D.SC. LEEDS,

CONSULTING SURGEON TO THE LEEDS GENERAL INFIRMARY.

WE deeply regret to announce the death, at his residence at Filey, on Good Friday, April 9th, of Mr. Claudius Galen Wheelhouse, the well-known surgeon. His death was not unexpected, for he had suffered for some weeks in a serious manner from attacks of cardiac syncope, but until quite the end he bore his burden of years bravely.

Claudius Galen Wheelhouse was born at Snaith in 1827, where his father, Mr. James Wheelhouse, practised as a surgeon. At the age of seven he entered the country branch of Christ's Hospital at Hertford, and later passed into the main school where he remained until, at the age of 16, when he made up his mind to follow in his father's footsteps and become a medical practitioner. At the age of 16 he was accordingly apprenticed to a firm of medical men in Ollerton, Notts, with whom he resided as a pupil for three or four years, and from whom he received such kindness and excellent instruction that he always advocated a system of apprenticeship for those entering the medical profession long after such a system had become practically obsolete. In 1846, being now 19 years of age, young Wheelhouse entered the Leeds School of Medicine, where he remained for three years until he obtained the

diploma of M.R.C.S. Eng. in May, 1849. In the autumn of that year he left England in the professional charge of a party of noblemen, and in the course of a long and interesting journey visited Greece, Turkey, Egypt, Syria, and Palestine, taking with him one of the first photographic cameras that ever left England, which he used with considerable success, the resulting pictures being in the possession of his family.

In 1851 Mr. Wheelhouse became the partner in the well-established practice in Leeds of Mr. Joseph Garlick, and in the same year he was appointed demonstrator of anatomy in the Leeds Medical School and surgeon to the Leeds Public Dispensary. He now became an exceedingly busy man, being engaged at the same time in all the cares of general practice while pursuing with ardour the purely scientific side of his profession as a highly successful teacher. In 1864 he became a Fellow of the Royal College of Surgeons of England, and about this time he severed his connexion with the Public Dispensary, being elected surgeon to the Leeds Infirmary. To his educational work Mr. Wheelhouse showed the greatest devotion. He lectured in turn upon anatomy and surgery and took large classes of private pupils, with whom he was extraordinarily successful. As the well-informed writer of the obituary notice in the *Yorkshire Post* says: "For many years few of the pupils of the Leeds School of Medicine presented themselves for examination at the Royal College of Surgeons until they had his assurance that they were fit to do so, and even to this day many of his old pupils will remember with gratitude the care he took in their preparation. The high position to which the Leeds School of Medicine attained was to a very large extent due to the unremitting zeal which Mr. Wheelhouse took in nursing the institution through its early difficulties, and he is pronounced by the students of that day to have been one of the best teachers of anatomy, physiology, and surgery that the school ever possessed."

We can trace in Mr. Wheelhouse's extremely successful career during the next 20 years of his life why he was universally regarded in the profession as the most typical representative of general professional interests in the country. And we can see also why he himself was so ardent a champion of the rights of the general practitioner and so earnest in his declarations that the general practitioner must always be the backbone of our calling. He was himself in general practice while making his influence felt in a continually increasing manner both as surgeon and teacher, and he always attributed his success to the thorough manner in which he had been grounded in the elements of his calling by his apprenticeship as a youth. He carried into the practice of surgery the thoroughness and accuracy which he owed to his long anatomical studies, together with an attention to detail that was the outcome of much bedside experience. These qualities are well shown in the operation which bears his name. External urethrotomy appears to have been first performed by Marianus Sanctus in 1554, though many have ascribed it to Jérome Cardanus and Durante Saccachi, but it was almost forgotten till 1844 when Syme introduced his operation for permeable strictures. For strictures through which it was not possible to pass any instrument Cock's puncture remained the sole resource until Wheelhouse in 1876 published his method of external urethrotomy. Until this operation was known, any attempt to reach the stricture by dissection was very likely to fail, for the surgeon was entirely without a guide and he was much more likely to miss the urethra than to find it. Wheelhouse claimed that his method rendered an operation, confessedly one of the most difficult in surgery, a comparatively easy one, giving results both immediately and ultimately more favourable than ever seen before. The operation remains to the present day the best method of dealing with most cases of impermeable strictures of the urethra; several modifications have been made in the details of the operation but no important alteration has been effected. The advance of surgery in the direction of asepsis renders it nowadays a much simpler operation to cut down directly on to the stricture, to dissect it out, and to suture the two ends of the urethra, for the septic risks have been much reduced, but this method of excision of the stricture will probably for long be reserved for the exceptional case, while Wheelhouse's operation, perhaps modified somewhat, will continue to be the operation of choice for impermeable strictures. To obtain the best results it is necessary to pay attention to Wheelhouse's instructions to open the urethra not at the stricture itself but at least a quarter of an inch in front of it.

Turning now from the scientific to the political side of Wheelhouse's busy career we find him as an important worker at the board of the General Medical Council and an active supporter of the British Medical Association, in which he held at different times the chief offices. In 1878 he gave the Address in Surgery at the meeting at Bath, and from 1881 to 1884 he was President of the Council of the Association and in 1889 he was President of the Association when the annual meeting was held at Leeds. In referring to his masterly address on that occasion, which dealt with the subject of medical education and examinations, we said in these columns that his opinions were "those of one who has had a long and large experience combining in a rare degree that of a general and consulting practitioner and of a teacher in surgery," and it is worthy of note how often in his life his practical knowledge of all sides of his profession gave to his words an extraordinary impressiveness. And particularly was this so because he was no praiser of times gone by, though he was ever ready to uphold what had been good in them. In this Presidential Address he admitted that the new race of students were better educated than their predecessors and in the long run made better practitioners, but for the first few years of their professional life they were, he thought, unfamiliar with the common work of practice and the common types of disease, and consequently overburdened with their responsibilities. A short apprenticeship at the beginning of professional study was the remedy which he put forward, but, as has been clearly shown, the view never commends itself to recent generations of medical men. In speaking of examinations Mr. Wheelhouse, with the experience of long years of teaching to help him, believed that the best students were far too often rejected, while their inferiors passed with triumph through the influence of accident or successful cramming, and he advocated the elimination of subjects from the curriculum where their professional advantage was indirect. The whole address proved him to be an original thinker and a practical man. In 1897 he received the gold medal of the British Medical Association, and in the same year, when the annual meeting of the Association was held at Montreal, he, with Lord Lister, was among the recipients of the honorary degree of LL.D. from the McGill University.

In 1886, when the principle of direct representation upon the General Medical Council was first conceded, Wheelhouse, with his firm friend the late Dr. Glover and Sir Walter Foster were the selected representatives of the medical profession for England. Wheelhouse was again chosen with the same two colleagues for a second term of office, so that he sat uninterruptedly for ten years upon the Council, during which time he served with the best of his great ability the cause of the general practitioner. There was nothing of the demagogue about him, so that all his words and actions were not pleasing to a certain type of reformer, but in the Council his opinion was always listened to with respect. In 1896 the medical profession was sharply divided by the vexed question of the registration of midwives and Wheelhouse decided not to offer himself for re-election; nor could he be persuaded to reconsider this decision when in the following year an unexpected vacancy in the direct representation of the profession occurred. On the inauguration of the University of Leeds in 1904 Mr. Wheelhouse received at the hands of the Marquis of Ripon, Chancellor of the University, the degree of D.Sc. as a recognition of his devotion to the cause of medical education in Leeds, and the occasion must have been a singularly gratifying one to him as it marked the successful outcome of labours to which he and a small but distinguished group of colleagues had devoted themselves for many years.

One other side of Mr. Wheelhouse's valuable public life deserves mention, as it shows him in his right light as one of the kindest of men—we refer to his lengthy association with the West Riding Charitable Society. Whilst in partnership with Mr. Garlick, who was secretary to the West Riding Charitable Society from its foundation in 1828, Wheelhouse became interested in its work, and after the death of his partner he continued to assist the new secretary, whom he eventually succeeded. The work was congenial to him and he threw himself into it with extraordinary zest. For his

services to it as secretary and treasurer for 25 years 300 of his fellow members in 1902 presented him at the annual dinner at Wakefield with a gold watch and chain, a tea service, and the names and addresses of the subscribers in an album.

He was on the commission of the peace for the East Riding Division of Yorkshire, and as magistrate, school manager, churchwarden, and the holder of other public offices contributed in no small measure to the welfare of the county with which he was associated.

In this brief notice of the career of Mr. Wheelhouse we have endeavoured to show the consistent honesty and simplicity of the man. He had fine ideals of what the medical life should be and what was the right training for it, and he steadily lived up to those ideals.

JAMES HARDIE, M.D. EDIN., F.R.C.S. ENG.,

CONSULTING SURGEON TO THE MANCHESTER ROYAL INFIRMARY, ETC.

James Hardie, who died on March 27th, was born in 1841 at Tyninghame in East Lothian, a few miles from North Berwick and within sight of the Bass Rock. After attending the village school until the age of 14 years he went to the Edinburgh High School whence in 1857 he entered the University of Edinburgh as a medical student. Here he came under the influence of both Syme and Lister, the latter of whom had just begun his remarkable work at Edinburgh. Under such surroundings Hardie early became imbued with an enthusiasm for surgery and possessed with a desire to become a surgeon, but after graduating as M.D. in 1862 several years passed before there appeared any prospect of his aspirations being realised. The late "sixties" found Dr. Hardie immersed in the exacting work of a busy general practice at Harpurhey in the outskirts of Manchester but still bent upon being a surgeon. A newcomer in a large town, without influence, wanting even the English surgical qualifications so helpful, if not actually essential, for the gaining of a hospital appointment, the chance of his ever becoming a surgeon seemed very remote. But James Hardie's nature was one not easily depressed. In spite of the trying demands of a large general practice he kept up his surgery and managed to gain enough reputation to be appointed as surgeon to the, at that time, small clinical hospital for women and children, now the Manchester Northern Hospital. This success was followed by his election as visiting surgeon to the large Manchester Poor-law Township Hospital. This appointment carried a salary and brought a large amount of interesting administrative work in connexion with the planning, building, and organising of the large union hospital at Crumpsall for the accommodation of more than a thousand patients. On the strength of these two hospital appointments Dr. Hardie decided to give up general practice and embark upon a career as a pure surgeon. Still, for a long time patients were few and success seemed so remote that even he became dispirited and the public health service seemed to offer superior attractions. By virtue of his connexion with the Manchester and Salford Sanitary Association he was selected on the short list for one of the newly created sanitary districts of the county of Cheshire and only narrowly escaped becoming a medical officer of health. The successful candidate on this occasion was his old fellow-student, Dr. (now Sir) Thomas R. Fraser of Edinburgh, who did him an ever gratefully remembered service by defeating him. After this excursion into public health surgery once more claimed him. By active participation in the medical life of the town, aided by communications to the various medical societies, notably by a paper on the Pathology of Club-foot, Mr. Hardie (as he now began to be called) began to acquire a reputation as a surgeon.

In 1876 a vacancy arose on the surgical staff of the Manchester Royal Infirmary for an assistant surgeon. Notwithstanding the fact that he had no previous official connexion with either the institution or the medical school, Mr. Hardie succeeded in gaining the appointment after a hard fight. To this was soon added the valuable appointment of district surgeon to the London and North-Western Railway, and in 1882, by the retirement of the late Mr. Edward Lund, Mr. Hardie from assistant surgeon became full surgeon. In this same year he became by examination a Fellow of the Royal College of Surgeons of England. From this time, or rather from the date of his first appointment to the infirmary, his success was assured, but the bare narration of these successive steps in his career affords no idea of the amount of energy and persistent effort required to accomplish it. For a stranger in a general practice in a large town in a few years to gain a footing on the staff of a leading teaching hospital is in itself no small achievement, and argues much ability backed by great force of character. Mr. Hardie's active connexion with the infirmary lasted until 1901, when on reaching the age limit he became consulting surgeon. In 1894 he was elected on the Council of the Royal College of Surgeons of England, and throughout his term of office took an active and prominent part in the affairs of the College.

As a surgeon Mr. Hardie almost from the first became an enthusiastic adherent of Lister, and while remaining a "good all-round man" he early devoted himself especially to the domain of plastic surgery. In this department he became distinguished for the originality, boldness, and ingenuity of his operations and the dexterity and success with which he carried them out. Chief amongst many modifications of existing operations he conceived the idea of transplanting the terminal phalanx of the little finger to form the bridge of the nose in the Tagliacotian operation for the restoration of that organ, a procedure which he carried out with success in many cases. Confident in the safety of strict antiseptic methods, he was the first in this country to perform and to advocate the open method of operating upon Dupuytren's contraction by which the contracted hypertrophied palmar fascia is freely exposed and completely removed. This he did at a time when any interference with the palmar fascia other than by timid tenotomies was dreaded by most surgeons. In the operative treatment of hare-lip and cleft palate he earned a deservedly high reputation; in his hands these operations appeared most simple procedures. Those who watched him operating in many of these cases were always impressed by the simplicity of the methods which he employed. In the most severe cases, rarely, if ever, had he recourse to any of those out of the way plans set forth in surgical literature. Under Hardie's deft hands the most severe deformities were rectified by ordinary simple straightforward methods. Unfortunately, qualities of this nature and cunning of hand cannot be described on paper, and, moreover, Mr. Hardie had a disinclination for writing. He did not often publish his cases or explain his methods, and so scarcely gained that credit to which he was justly entitled.

The various institutions with which he was connected had in him an active officer, one interested in all the details of their management and politics. Coming from Edinburgh, which owes so much of its repute as a medical teaching centre to its extra-mural schools, he was a moving spirit in an attempt to provide Manchester with similar advantages for its students. Fortunately or unfortunately, the effort was abortive and ended in failure through the defection of some of its supporters just when success seemed assured, to the lasting regret of at least one of its projectors. The long debated question of the situation of the new infirmary found Mr. Hardie a strong advocate for the rebuilding of a larger hospital on the original central site. In furtherance of this, and to illustrate his views upon double wards and the plenum system of ventilation, he had drawn up by his friend the architect of Marischal College, Aberdeen, the plan of a beautiful Gothic building. This, whatever might have been its merits or demerits as a hospital, by its originality of design, beauty, and artistic proportions would have adorned a magnificent site and conferred distinction on the town.

His active, restless temperament made him take a share in all medical affairs; he was for long a leading member of the Edinburgh University Club, the Manchester and Salford Sanitary Association, and other public bodies more or less allied to medicine. As a colleague he was always conspicuous for loyalty to his fellow workers, particularly in reference to any public question. While he might on occasion be tenacious of his individual rights, he was invariably just and reasonable in his attitude towards the claims of others. Gifted with a capacity for expressing his views clearly and distinctly, and always having definite opinions, he was a valuable member of any committee. He could make up his mind quickly and definitely upon any matter, fearlessly take a side, and loyally stick to it. There was no suspicion of temporising or wavering in his character, which led to his gaining

a well-deserved reputation for honesty of purpose and direct dealing. Unhappily ill-health, which attacked him comparatively early in life, militated against the full development and exercise of his undoubted abilities and impaired his usefulness. However, in spite of all he accomplished something, and his older friends who knew him in early days will cherish the memory of what he used to be and of what he did accomplish, while regretting what he might have done with better health. He married early in his career Miss Young, daughter of the well-known Edinburgh surgical instrument maker, who survives him. Their one child, a son, died some years ago.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Theodor von Dunin, physician to the Hospital of the Child Jesus in Warsaw.—Dr. Hermann Julius Thomas, medical councillor, of Badenweiler and Nervi, where he practised during the winter months.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination of the Conjoint Board in Anatomy and Physiology held on April 1st, 2nd, 5th, and 6th, 98 candidates presented themselves, of whom 66 were approved and 32 were rejected. The following are the names of the successful candidates:—

George Aldridge, St. Bartholomew's Hospital; Thomas Stevens Allen, Guy's Hospital; Charles Vernon Anderson, St. Thomas's Hospital; Charles Nelson Atlee, St. Mary's Hospital; Herbert Ferris Barge, Guy's Hospital; William Rawson Barlow, Middlesex Hospital; Tremlett Brewer Batchelor, B.A. Oxon., Oxford University and London Hospital; Ellis Campbell Bowden, London Hospital; Ronald Edgar Russell Burn, St. Bartholomew's Hospital; Terence Campbell Butler, Westminster and King's College Hospitals; Albert James Clarke, St. Bartholomew's Hospital; Thomas Clarke, Leeds University; Charles Frederick Constant, Guy's Hospital; Hugh Gregan Crawford, Guy's Hospital; Joseph Henry Creasy Davis, Middlesex Hospital; Alfred Evan Lewis Devonald, King's College Hospital; William Everard Sherard Digby, Guy's Hospital; John Chute Ellis, New Zealand University and London Hospital; Alfred George Timbrell Fisher, University College, Bristol, and St. Bartholomew's Hospital; Charles Michael Forster, B.A. Cantab., Cambridge University and Charing Cross Hospital; Philip Withers Green, St. Mary's Hospital; Felipe Guevara-Rojas, M.D. Caracas, Caracas University and St. Bartholomew's Hospital; Geoffrey Hadfield, St. Bartholomew's Hospital; Thomas Lionel Hardy, B.A. Cantab., Cambridge University and Middlesex Hospital; Ernest Ravensworth Hart, Guy's Hospital; Harold Harvey, Birmingham University; John Rollo Hayman, Middlesex Hospital; Edward Howard Heaton, London Hospital; Robert Hamer Hodges, King's College Hospital; Bernard Whitchurch Howell, St. Bartholomew's Hospital; Arthur Edward Huxtable, Charing Cross Hospital; William Sadler Hyde, Guy's Hospital; John Cecil Jefferson, Manchester University; Sohan Lal, Punjab University and London Hospital; Maurice Mackenzie, London Hospital; Melville Douglas Mackenzie, St. Bartholomew's Hospital; Frank Chafen Newman, B.A. Cantab., Cambridge University; Cuthbert John Nicholson, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Burford Noel Norman, University College; John Forbes O'Connell, St. Mary's Hospital; Wilfrid George Orchard, St. Bartholomew's Hospital; Jorabhai Bhaibabhai Patel, Bombay University and King's College Hospital; Cresswell Lee Pattison, St. Mary's Hospital; Cecil Joseph Herbert Pearson, London Hospital; George Harold Pearson, London Hospital; John Pinder, Leeds University; Courtenay Henry Gerard Pochin, Guy's Hospital; Thomas William Watkin Powell, St. Mary's Hospital; Richard Cruikshank Poyser, Guy's Hospital; Richard Frith Quinton, London Hospital; Edward Gordon Reeve, Guy's Hospital; Cecil Goodwin Reinhardt, Leeds University; Edmund Uniacke Russell, King's College Hospital; Ahmed Sabri, Cairo Medical School and St. Thomas's Hospital; Wilfrid Ralph Sadler, St. Bartholomew's Hospital; Henry Kenneth Victor Soltau, St. Bartholomew's Hospital; William Steuart, St. Bartholomew's Hospital; Hugh Stott, University College; William Edward Tanner, Guy's Hospital; Julian Taylor, University College; Keshav Sadashiv Thakur, L.M. & S. Punjab, Punjab University and University College; Victor Vesselovsky, St. Thomas's Hospital; Victor David Collins Wakeford, St. Bartholomew's Hospital; Philip James Watkin, Guy's Hospital; John Robert Douglas Webb, Liverpool University; and Cyril Guy Whorlow, St. Thomas's Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Preliminary Science Examination for the Licence in Dental Surgery held on March 29th and 30th and April 1st the following gentlemen were approved in the undermentioned subjects:—

Chemistry and Physics.—David Cohen Bernstein, Birmingham University; Gwilym Tremain Davies, Middlesex Hospital; Frederic Hopkinson, Royal Technical Institute, Salford; Montagu Fred Hopson, Guy's Hospital; Charles Henry Houaden, Battersea Polytechnic; Hubert Humphry, Birkbeck College; Bertram Howard Jones, Middlesex Hospital; Michael William Joseph, Birmingham University; Reginald Charles Kershaw, Liverpool Municipal Technical School; John Farnham Mace, Birmingham University; George Matthews, Guy's Hospital; Alan Lawrence Miller, Birmingham University; Herbert Vincent Morley, University College, Cardiff; William Davies Motton, Charing Cross Hospital; Hugh Bertram Neely, Guy's Hospital; Wilfrid Stephen Ollis, Guy's Hospital; Harold Robert Parkes, Liverpool University; Ivan Wallace Pasmore, Royal Albert Memorial College, Exeter; John Hargrave Rhodes, Cambridge University and Wandsworth Technical Institute; Gilbert John Stuart Rose, Polytechnic Institute; Max Schneider, Guy's Hospital; Reginald Douglas Tanner, Guy's Hospital; Sidney Thomas Taylor, Middlesex Hospital; Cecil Ernest Thomas, Simon Langton School, Canterbury; Oscar Henry Titmas, Charing Cross Hospital; and Charles Henry Wilson, University College, Cardiff.

Chemistry.—Samuel Trude Fripp, Polytechnic Institute; Charles Edward Murch, Birkbeck College; Roy Harry Barkly Pallett, Middlesex Hospital; Christopher Hodgson Fywell, Middlesex Hospital; John James Ward, Harris Institute, Preston; and Lewis William Wilson, Charing Cross Hospital.

Physics.—Eric Sutton Dickin, Liverpool University; John Gordon Harris, Royal Technical Institute, Salford; Herbert James Pegler, Guy's Hospital; and Felix Lambert Pradier, Polytechnic Institute.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

PRIMARY EXAMINATION, PART I.

Biology.—J. F. Bourke, Glasgow; P. R. Cross, Birkbeck College; J. E. Kitchen, Manchester; L. F. Pain, Royal Free Hospital; and H. E. Rose, Cambridge.

Chemistry.—J. F. Bourke, Glasgow; P. R. Cross, Birkbeck College; J. E. Kitchen, Manchester; W. A. Oaten, Royal Free Hospital; and H. G. Steel, St. Mary's Hospital.

Materia Medica and Pharmacy.—P. R. Cross, Birkbeck College; F. I. G. Hunter, Royal Free Hospital and Liverpool; and R. E. Laurent, Edinburgh.

PRIMARY EXAMINATION, PART II.

Anatomy.—H. Cox, Birmingham; H. N. Eccles, Guy's Hospital; C. de C. W. Langdon, Manchester; P. J. Montgomery, Middlesex Hospital; F. G. Norbury, Glasgow; H. Rimington, St. Bartholomew's Hospital; and R. A. Robinson, Liverpool.

Physiology.—H. Cox, Birmingham; L. S. Daly, Manchester; P. J. Montgomery, Middlesex Hospital; F. G. Norbury, Glasgow; H. Rimington, St. Bartholomew's Hospital; and R. A. Robinson, Liverpool.

UNIVERSITY OF LIVERPOOL.—The following is a list of the successful candidates in the recent examination for the Diploma in Tropical Medicine:—

R. G. Abercrombie, J. R. P. Allin, H. P. W. Barrow, P. Carr-White, W. S. Clark, R. Cope, W. D. Hayward, W. P. Meldrum, J. C. Murphy, M. G. Samuel, M. H. Thornely, and W. S. Webb.

UNIVERSITY OF DURHAM.—At the Convocation on April 3rd the following degrees were conferred:—

Doctor of Medicine.—Gilbert Iliffe Cumberlegge, Robert Alexander Morris, William Waters Stainthorpe, and Percy Edward Turner.

Degree of Doctor of Medicine for Practitioners of 15 Years' Standing.—Graham Thomas Baylis Blick, Alfred Arthur Hill, Ernest William Gurney Masterman, Edward James Fleetwood Moore, John Percy Oliver, and Walter John Ernely Sumpter.

Master of Surgery (M.S.).—Bryden Glendining.

Bachelor of Medicine (M.B.).—Kenneth Bruce Allan, College of Medicine, Newcastle-upon-Tyne; Harriett Amelia Rachael Apps, London School of Medicine for Women; Eldred Curwen Braithwaite, Leonard Foster Browne, and Charles Ernest Lewis Burman, College of Medicine, Newcastle-upon-Tyne; Leslie Wilson Evans, Guy's Hospital; John Robert Dunn Holtby, Queen's College, Belfast; Henry Frederick Iliewicz, London Hospital; Duncan Matheson Johnston, St. Bartholomew's Hospital; Annie Viccars Mack, College of Medicine, Newcastle-upon-Tyne; Jessie Margaret Murray, London School of Medicine for Women; and Friederike Rahtkens, College of Medicine, Newcastle-upon-Tyne; William Rollin, Robert Henry Smallwood (Rev.), and Theodore William Stallybrass, College of Medicine, Newcastle-upon-Tyne.

Bachelor of Surgery (B.S.).—Kenneth Bruce Allan, College of Medicine, Newcastle-upon-Tyne; Harriett Amelia Rachael Apps, London School of Medicine for Women; Eldred Curwen Braithwaite, Leonard Foster Browne, and Charles Ernest Lewis Burman, College of Medicine, Newcastle-upon-Tyne; Leslie Wilson Evans, Guy's Hospital; John Robert Dunn Holtby, Queen's College, Belfast; Annie Viccars Mack, College of Medicine, Newcastle-upon-Tyne; Jessie Margaret Murray, London School of Medicine for Women; and Friederike Rahtkens, William Rollin, Robert Henry Smallwood (Rev.), and Theodore William Stallybrass, College of Medicine, Newcastle-upon-Tyne.

Bachelor of Hygiene (B.Hy.).—Guy Rowland East, John Tyrer Johnson, William Roy Macdonald, Elizabeth Niel Neil, Arthur John Rushton O'Brien, and Gertrude Ethel O'Brien.

Diploma in Public Health (D.P.H.).—Guy Rowland East, John Tyrer Johnson, William Roy Macdonald, Elizabeth Niel Neil, Arthur John Rushton O'Brien, and Gertrude Ethel O'Brien.

UNIVERSITY OF ABERDEEN.—The following degrees in Medicine have been conferred:—

Doctor of Medicine (M.D.).—William Angus, Robert Chalmers, Horatio William Alexander Cowan, James Alexander Davidson, James Raffan, and Alexander Hugh Skinner.

Master of Surgery (Ch.M.).—James Robertson.

Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.).—Alexander Greig Anderson, William Anderson, David Main Baillie, John Abernethy Beattie, James Clark Bell, Douglas Walter Bruce, Alexander John Douglas Cameron, Arthur Harold Duckett, William Duguid, Naughton Dunn, James Elder, John Douglas Fiddes, George Clark Grant, Adam Gray, Herbert Hargreaves, John Inkster, William Wilson Jameson, Harold George Rannie Jamieson, John Johnston, Clement Rickard Macleod, John McPherson, Angus Macrae, Charles Armit Masson, John Louis Menzies, Robert John Merson, Herbert Stewart Milne, John Mitchell, Dawson Cameron Robertson, Finlay George Macleod Ross, Herbert Alexander Smith, George Christie Soutter, Douglas Martin Spring, Augustus George Stewart, Robert Sturrock, Charles Claud Twort, Alfred John Williamson, and Alexander Wilson.

Diploma in Public Health.—George Davidson, John Ferries, Alexander Fraser MacBean, Rae McRae, Arthur James Milne, William Gordon Watt, and Thomas Charles McCombie Young.

LONDON SCHOOL OF TROPICAL MEDICINE.—The examination in Tropical Medicine held at the end of the twenty-ninth session, January to April, was successfully passed by the following candidates:—

*J. A. Beamish, *I. Davenport Jones, Captain, I.M.S., *G. M. Gray (Colonial Service), *L. Garnin, J. H. McDonald, Major, I.M.S., S. A. Winsor, J. W. Archibald (Colonial Service), Miss Dora Watney, M.B., E. M. Franklin (Colonial Service), D. C. Master, R. Mortimer Johnson, T. Hood Rankin (Colonial Service), C. W. O'Keeffe (Colonial Service), J. C. Spillane, T. F. Lumb (Colonial Service), A. W. Grant (Colonial Service), G. B. Mason (Colonial Service), A. H. Fyzee, and R. C. Thomas.

* Passed with distinction.

It is proposed to hold advanced courses in Medical Zoology—i.e., in Protozoology, Arthropodology, and Helminthology—commencing on or about Jan. 15th, May 1st, and Oct. 1st in each year, for medical men and veterinary surgeons. Students who have attended the ordinary course are eligible, and also others who satisfy the teachers in these subjects that they possess sufficient rudimentary knowledge to benefit by these courses. The advanced course in each subject will begin at the expiration of the ordinary course in that subject at 10 A.M., viz.: General medical zoology, first week of the session; protozoology, fourth week of the session; arthropodology, seventh week of the session; and helminthology, tenth week of the session. Arrangements are so made that the advanced course in all three subjects can be taken during the three months or the whole time may be spent on one subject. Special arrangement may be made with the teachers where it is desired to spend more time on one branch to the exclusion of the others or to undertake research work in that subject. The subjects in each are as follows: The advanced course upon general medical zoology (Colonel A. Alcock, I.M.S.) will consist of eight meetings, at which will be considered the more important morphological and biological characters of the groups which are not treated in the courses of protozoology and helminthology, such as the rats and mice, the blood-sucking bats, the venomous reptiles and fishes, and certain forms of minor importance, particular attention being directed to the venomous snakes. The lectures will be based upon demonstrations of actual specimens. The advanced course in protozoology (Dr. C. M. Wenyon) will consist of demonstrations and practical work. No formal lectures will be given, but each student will receive individual instruction in the laboratory. The course will be almost entirely a practical one in order that the students may become acquainted with some of the more difficult methods of preparation and culture of the protozoa. The advanced course upon arthropodology (Colonel Alcock) will consist of 12 meetings, at which will be considered: (1) The general morphology of the several constituent classes of the phylum and of the orders diptera, siphonaptera, hemiptera, siphunculata, and acarina; and (2) the generic and specific characters and life-history of those forms which are concerned in parasitism and the dissemination of disease in man. The lectures will be based upon demonstrations of actual specimens. The advanced course in helminthology (Dr. R. T. Leiper) will consist almost exclusively of practical work in the research laboratory under the supervision of the helminthologist. The structure and development of the more important human helminthes, already considered in the ordinary course, will be restudied in detail. Many of the rarer parasites will also be examined. Considerable attention will be given to methods of collecting and preserving the various kinds of worms, and for this purpose occasional visits will be made to abattoirs. The last two days of the course will be devoted to the study of leeches. Past students of the school who have taken a course of more than one month will be admitted at the rate of £1 1s. per week; others at the rate of £1 11s. 6d. per week. Students who have attended these courses are eligible for the Cragg's prize and for the appointments as Cragg's Investigators. Further particulars as to the course of study may be had on application to Dr. C. W. Daniels, the Director at the school, Connaught-road, Albert Dock, E., or to the Secretary at the head office, Seamen's Hospital, Greenwich, S.E.

Dr. Franz Ritter von Haberler of Innsbruck has been appointed Ministerial Councillor and Medical Referee to the Austrian Ministry of the Interior in succession to the late Dr. Daimer.

MEDICAL MAGISTRATE.—Among a number of new magistrates whom the Lord Chancellor has just appointed for the borough of Eastbourne is Mr. David Matthews Browne, M.B., C.M. Edin., M.R.C.S. Eng. Dr. Browne has been a resident of Eastbourne for about 18 years.

WE are requested to state that forms of application for the admission of children into the Lord Mayor Treloar Cripples' Home and College, Alton, can be obtained from Sir William Treloar, 122, Mansion House Chambers, London, E.C. Special consideration will be given to applications for the admission of children suffering from tuberculous disease of the bones and joints.

LITERARY INTELLIGENCE.—Messrs. Hammond, Hammond, and Co., of 12, Paternoster-row, have just issued a new work by Dr. A. D. Edwards, medical officer of schools for Bournemouth, entitled "Children of the Poor." The book deals with such subjects as child-life in the slums, underfed and overworked children, pain and suffering in childhood, childhood in the workhouse, open-air schools, and the Children Act of 1908.

THE MIDLAND MEDICAL UNION AND THE MIDWIVES ACT.—The following resolution was passed at a meeting of the Midland Medical Union held at Chesterfield on April 8th, after a discussion of the position held by the medical practitioner under the Midwives Act, 1902:—

That it should be illegal for a midwife to attend a woman in her confinement unless a medical practitioner is retained, so that he may be called in in case of abnormality or disease in connexion with parturition. When the wages are less than 18s. per week and 2s. per child under 14, the Public Assistance Authority shall, if requested, issue an order requisitioning the services of a medical practitioner. This order shall entitle the medical practitioner to a fee of 5s. for a preliminary examination and advice on the preparation for labour, and to adequate remuneration in the event of his having to take charge of the case on account of abnormality or disease in connexion with parturition.

We are informed by the secretary to the union that the resolution has been forwarded to the Departmental Committee of the Privy Council which is now sitting on the matter.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held on March 23rd at Caxton House, Westminster, with Dr. F. H. Champneys in the chair. The Board considered the following charges amongst others against certain midwives and ordered them to be struck off the roll:—

M—— J—— B——, that being in attendance as a midwife at a confinement, the patient suffering from severe sickness and pains in the back, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, nor did she hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her as required by Rules E, 18 and 19. P—— B——, that being in attendance as a midwife at a confinement, the patient being ill, suffering from diarrhœa with high temperature, about the seventh day, she did not send for a doctor. S—— B——, that being in attendance as a midwife at a confinement, the child's eyes being inflamed on the third day, she did not send for a doctor. D—— H——, that she had been convicted of stealing. J—— L——, that being in attendance as a midwife at a confinement, the patient suffering from abdominal pain, chill, and rigor, she did not send for a doctor. M—— A—— Q——, that being in attendance as a midwife at a confinement, the patient suffering from a severe shivering fit, with considerable pain in the side, she did not send for a doctor. A—— M—— R——, that being in attendance as a midwife at a confinement, the placenta and membranes not having been expelled two hours after the birth of the child, she did not sendfor a doctor. E—— T——, that being in attendance as a midwife at a confinement, the presentation being abnormal, she did not send for a doctor. J—— W——, that being in attendance as a midwife at a confinement, the child being stillborn and no registered medical practitioner having been in attendance, she failed to notify the local supervising authority, as required by Rule E, 20. F—— M—— W——, that being in attendance as a midwife at a confinement, the patient suffering from persistent vomiting and headache shortly after the confinement, from abdominal pain and feverishness on the third day, and from rigor on the fifth day, she did

not send for a doctor. R—— K——, S—— J—— L——, and H—— T——, that they were uncleanly and did not take with them to confinements the appliances and antiseptics required by Rule E, 2. E—— M—— B——, for habitual drunkenness. A—— G——, that on March 9th, 1895, she was convicted of having unlawfully and feloniously used an instrument with intent to procure miscarriage and was thereupon sentenced to be kept in penal servitude for a term of five years; that on Oct. 27th, 1904, she procured the grant of a certificate to her by the Central Midwives Board by causing to be made and by producing a false and fraudulent certificate of good moral character. S—— A—— M——, that she had been convicted for being drunk and disorderly during the years 1902 to 1904, and that on April 27th, 1905, she procured the grant of a certificate to her by the Central Midwives Board by making a false and fraudulent representation that she was trustworthy, sober, and of good moral character, and by causing to be made and by producing a false and fraudulent certificate to this effect.

The documents relating to the last two cases were ordered to be sent to the Public Prosecutor. The following midwives were cautioned after charges against them had been considered: M. A——, A. M. B——, and F. C——. E. M—— and M. E. S—— were censured after charges alleged against them had been considered.

THE CHILDREN'S FRESH AIR MISSION.—The annual meeting of this charity will be held, under the presidency of the Lord Mayor, at the Mansion House, on April 27th, at 3 P.M. It exists to provide change of air for the children of the poorer classes, especially the sickly ones, in the congested districts of Holborn, Clerkenwell, and St. Luke's, and by arrangement from other parts of London. The objects of the mission should appeal to all who look forward with eagerness to the rest and recuperation which they derive from their own annual holiday, and the committee states that a subscription of 10*s.* will give a child a fortnight in the country. The mission was founded in 1882, when 269 children were sent out of London, and the numbers steadily progressed until last year 3224 received the benefits of the society, making a grand total of 70,763 since its foundation. It may be fairly claimed that this work has had a beneficial effect upon the health of a helpless section of the community in which the recent report of the Education Committee of the London County Council has proved a sadly great amount of disease to exist. We commend the mission to our readers.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Easter Recess.

BOTH Houses of Parliament adjourned on April 7th for the Easter Recess. The House of Commons will reassemble on Monday, April 19th, and the House of Lords on Tuesday, the 20th. Since Parliament met in February a large portion of the time of the Commons has been occupied with financial business, and accordingly the Government programme of legislation is not far advanced for the season of the year. A second reading, however, has been obtained for the Housing and Town Planning Bill. It is not going to be sent to a Standing Committee this year, and it is highly probable that the Government will take steps to accelerate its rate of progress after the Easter holidays.

The Progress of Private Members' Bills.

Private Members' Bills under the stress of modern legislative conditions have little chance of reaching the Statute Book. Few of them do reach it, but that fact in no way seems to deter Members from introducing measures on their own account to further causes in which they have an interest. Frequently the object is merely to embody definite proposals in a public document in order that a measure of attention should be given to them both in and out of Parliament. About 150 Bills have already been brought in during the present session in the House of Commons. The vast majority of them have not yet received a second reading. Amongst those which have been fortunate to make progress is Mr. BRAMSDON'S Oaths Bill which is designed to substitute the taking of an oath by uplifted hand for the prevalent practice of "kissing the book." This measure has passed through its committee stage. Sir WILLIAM COLLINS'S Bill dealing with the superannuation of asylum officers has been sent to a Select Committee. Amongst the Bills which are awaiting a second reading are the Asylum Officers' Superannuation (Scotland) Bill, the Coroners' Inquests Bill, the Deaths Registration and Burials Bill, the Infant Life Protection Bill, the Local Education Authorities (Medical Treatment) Bill, the Medical Acts Amendment Bill, the Necessitous Mothers (Assistance) Bill, the Nurses Registration Bill (introduced by Mr. MUNRO FERGUSON), the Nurses Registration (No. 2) Bill (introduced by Mr. FINDLAY), the Prohibition of Vivisection Bill, the Public Health Officers Bill, the Registration of Nurses (Scotland) Bill (introduced by Mr. CLELAND), and the Vivisection (Abolition) Bill.

Beri-Beri on Merchant Ships.

Several questions have recently been addressed in the House of Commons to the representatives of the Board of Trade in regard to the deaths of Asiatic firemen and seamen on board British merchant ships from beri-beri. The replies have dealt with the circumstances of each case brought forward, but Mr. TENNANT, the Parliamentary Secretary to the Board, has several times embodied in his answers a statement to the effect that the cause of beri-beri has not yet been ascertained, but it is probable that bad or insufficient food may predispose to the disease.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 7TH.

Escapes of Lunatics.

Mr. CHIOZZA MONEY asked the Secretary of State for the Home Department how many imbeciles and lunatics had escaped from public asylums in the United Kingdom during the last five years, and how many of the escaped lunatics were recaptured.—Mr. GLADSTONE replied: I have not the figures for the United Kingdom, but the following are the number of escapes and recaptures respectively in the last five years in England and Wales:—

Year.	Escapes.	Recaptures.
1904	367	327
1905	363	328
1906	396	349
1907	356	317
1908	364	308
Total	1846	1629

A Grant to Mr. H. W. Cox.

Mr. BOWERMAN asked the Prime Minister what was the result of the consideration given to the case of Mr. H. W. Cox, who recently sustained serious and permanent injuries in connexion with x rays research work.—Mr. HOBHOUSE (Secretary to the Treasury, who replied on behalf of Mr. ASQUITH) said: A grant has been made to Mr. Cox from the Royal Bounty Fund.

Escapes from Asylums.

Mr. CHIOZZA MONEY asked the Secretary of State for the Home Department, with reference to the 67 imbeciles and lunatics who escaped from public asylums in England and Wales between Jan. 1st and March 31st, 1909, how the 67 lunatics in question were classified with regard to the degree of their lunacy or imbecility by the authorities; how many of the 67 had been recaptured; and what measures he was taking with asylum authorities to protect the public from an average of five escapes from public asylums per week.—Mr. GLADSTONE replied: The Commissioners in Lunacy cannot yet furnish me with the information referred to in the first part of the question. 57 out of the 67 who escaped were recaptured. The Commissioners consider, and I agree, that asylum authorities generally in the country take proper precaution to prevent escapes. As they state in the report which was presented to Parliament last week, public opinion would not endorse the retrograde step of making asylums once more in the nature of prisons.

Mr. ARNOLD HERBERT asked the Secretary of State for the Home Department whether, having regard to the number of escapes from convict prisons and lunatic asylums, and the difficulty and expense of tracing and recapturing persons who had so escaped, he would cause experiments to be made with bloodhounds in cases of future escapes.—Mr. GLADSTONE furnished the following written reply: I see grave objections to adopting this suggestion, especially in the case of lunatics. I am, however, obtaining some further information on the subject.

Medical Inspection in Irish Schools.

Mr. VINCENT KENNEDY asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that in Ireland there was no medical inspection in the schools, although most countries, including England, enjoyed it; that in Hungary the schools were medically inspected three times annually; and that without medical inspection the Prevention of Tuberculosis Act would largely lose its value and portions of the Children Act (Clause 122) would be inoperative in Ireland; and further, whether he would see that Ireland would derive as much benefit from this legislation as England would.—Mr. BIRRELL replied by written answer: I am unable to add anything to the reply given on my behalf by my right honourable friend the Attorney-General for Ireland to a question asked by the honourable Member for South Down on Feb. 26th, 1908.

The Drainage of the Village and District of Sketty.

Sir DAVID BRYNMOR JONES asked the President of the Local Government Board whether the Swansea rural district council applied to the Board on or about June 1st, 1908, for its sanction to borrow £13,000 for sewerage works for the village and district of Sketty within the area of the council, and that an inquiry was held by one of the Board's inspectors into the question of the expediency of the proposed works and expenditure in August last; and whether, seeing that the drainage of that village and district was in an unsatisfactory condition and dangerous to the health of the inhabitants, he could see his way to giving the required sanction at an early date.—Mr. BURNS furnished the following written answer: The facts are as stated in the question. The scheme involves the laying of a sewer on the foreshore below high water mark, and to this the consent of the Board of Trade is necessary. That department has the matter before it, and as soon as its decision has been given I shall be prepared to deal with the application for sanction to the loan.

The Feeble-minded in Workhouses.

Mr. A. H. SCOTT asked the President of the Local Government Board whether he could issue an order to all Poor-law authorities to remove or isolate when possible all feeble-minded epileptics, inebriates, imbeciles, and lunatics from other inmates of the workhouses, as recommended in the recent reports of the Royal Commission on Poor-law and also in the reports of the Royal Commission on Aged Poor in 1895.—Mr. BURNS (by written answer) replied: To the extent to which existing accommodation or additions to accommodation in Poor-law

institutions may suffice for the modification of present arrangements affecting the classes to which the question refers the powers of the Local Government Board and of the Poor-law authorities could, no doubt, be exercised in the direction indicated in the question. But for any such comprehensive treatment of the matter as appears to be contemplated in the reports of the Royal Commissions to which my honourable friend alludes legislation would almost certainly be needed

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BEATTIE, A. J., M.B., B.S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Callander District of the county of Perth.

BLOXSOME, ARTHUR H., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed House Surgeon to the Royal Alexandra Hospital for Sick Children, Brighton.

DAVIES, J. L., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Newport District of the county of Monmouth.

FIELDEN, W. E., M.D. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Staplehurst District of the county of Kent.

JOSCELYNE, A. E., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Taunton District of the county of Somerset.

KERR, C. LAWSON, M.B., Ch.B. Glasg., has been appointed Assistant Medical Officer to the Argyll and Bute District Asylum, Lochgilphead.

MCKAIL, DAVID, M.D. Glasg., D.P.H. Camb., has been appointed Lecturer on Forensic Medicine and Hygiene and on Public Health at St. Mungo's College, Glasgow.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ASHTON-UNDER-LYNE DISTRICT INFIRMARY.—Junior House Surgeon. Salary at rate of £75 per annum, with board, residence, washing, &c.

BIRMINGHAM INFIRMARY.—Assistant Resident Medical Officer. Salary £104 per annum, with apartments, rations, &c.

BRIGHTON WORKHOUSE.—Resident Assistant Medical Officer. Salary at rate of £120 per annum, with apartments, rations, and other residential allowances.

BURSLEM, HAYWOOD HOSPITAL.—Resident Medical Officer (female). Salary £100 per annum, with board, residence, and laundry.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and lodging.

CAPE OF GOOD HOPE, COLONY OF.—Leprosy Research. Salary at rate of £450 per annum, with quarters and three rations.

CATERHAM ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, and washing.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon. Salary £60 per annum, with residence, board, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon. Salary at rate of £75 per annum, with board, residence, &c. Also Second Medical Officer for six months. Salary at rate of £40 per annum, with luncheon and tea.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £60 per annum, with board and washing.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.—House Physician for nine months. Salary at rate of £60 per annum, with board, residence, and washing.

HOLLAND (LINCS.) COUNTY COUNCIL EDUCATION COMMITTEE.—School Medical Officer. Salary £250 per annum, with travelling allowance.

HOSPITAL FOR EPILEPSY AND PARALYSIS AND OTHER DISEASES OF THE NERVOUS SYSTEM, Maida Vale, W.—Resident Medical Officer for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon; also Assistant Casualty Medical Officer; both unmarried, for six months. Salary in each case £30, with board and residence.

HULL, ROYAL INFIRMARY.—House Physician, unmarried. Salary £100 per annum, with board and apartments.

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Two House Surgeons for six months. Salary at rate of £65 per annum.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, &c.

LEEDS GENERAL INFIRMARY.—Ophthalmic House Surgeon for seven months. Salary at rate of £50 per annum, with board, residence, and washing.

LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—House Surgeon. Salary at rate of £50 per annum, with board.

LEEK, STAFFORDSHIRE COUNTY ASYLUM, Cheddleton.—Temporary Assistant Medical Officer for six months. Salary at rate of £200 per annum, with apartments, board, and washing.

LINCOLN MENTAL HOSPITAL, The Lawn, Lincoln.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, &c.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board and residence.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead.—Junior Resident Medical Officer. Salary £50 per annum, with board and residence.

NEW HOSPITAL FOR WOMEN, Euston-road, London, N.W.—Two House Surgeons and Clinical Assistant (females).

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with apartments, board, washing, and attendance.

NORTHUMBERLAND HOUSE, Finsbury Park, N.—Assistant Medical Officer, unmarried. Salary £135 per annum.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with board, lodging, and washing.

POPLAR AND STEPNEY SICK ASYLUM DISTRICT.—Third Assistant Medical Officer. Salary £120 per annum, with rations, apartments, and washing.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—House Surgeon, House Physician, Junior House Surgeon, and Junior House Physician, all for six months. Salary of two former at rate of £75 per annum, and of two latter at rate of £40 per annum, with residence, board, and laundry.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Member of the Court of Examiners. Also Examiners under the Conjoint Examining Board in England and Examiners in Anatomy and Physiology for the Fellowship.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Assistant Surgeon.

ROYAL NATIONAL HOSPITAL FOR CONSUMPTION, Ventnor.—Locum Tenens. Three guineas weekly and travelling expenses.

ROYAL NAVAL MEDICAL SERVICE.—Examination for 15 Commissions.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Bridge-road, Lambeth, S.E.—Junior Resident Medical Officer. Salary at rate of £40 per annum, with board and washing.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, Strand, W.C.—Assistant House Surgeon for six months. Salary £20, with board.

SEAMEN'S HOSPITAL SOCIETY, Greenwich.—Two House Physicians. Salary £50 per annum, with board, residence, and washing.

SOCIETY OF APOTHECARIES OF LONDON.—Examiner in Surgery.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £100 per annum, with rooms, board, and washing.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon, unmarried, for six months. Salary at rate of £70 per annum, with residence, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill.—Junior House Surgeon. Salary £50 per annum, with board, apartments, and washing.

TORQUAY, TORBAY HOSPITAL.—House Surgeon. Salary £100 per annum, with residence and board.

TUNBRIDGE WELLS GENERAL HOSPITAL.—Junior Resident Medical Officer, unmarried. Salary £60 per annum, with board, apartments, gas, firing, and attendance.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Physician to Out-patients.

WAKEFIELD, CLAYTON HOSPITAL.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Physician. Also Assistant Physician.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Alloa, in the county of Clackmannan; at Stone, in the county of Stafford; at Clonmany, in the county of Donegal; at Castletown Berehaven, in the county of Cork; at Kingscliffe, in the county of Northampton; and at Loughton, in the county of Essex.

Births, Marriages, and Deaths.

BIRTHS.

DAVIDSON.—On April 2nd, at Baron's Court-road, W., the wife of George Gillies Davidson, M.D., of a son.

DOBLE.—On April 10th, at The Firs, Reedham S.O., Norfolk, the wife of F. Carminow Doble, M.R.C.S., L.R.C.P., of a son.

LOW.—On April 8th, at Harley-street, W., the wife of V. Warren Low, M.D., F.R.C.S., of a daughter.

MARRIAGES.

KIDSTON—FERGUSON.—On April 6th, at St. George's United Free Church, Edinburgh, Noel Wallace Kidston, M.B., Ch.B., to Elsa, younger daughter of John Ferguson, Edinburgh.

DEATHS.

BRUNTON.—At 10, Stratford-place, on the 14th inst., after a long illness, Louisa, the beloved wife of Sir Lauder Brunton, Bart., M.D., and the daughter of the late Ven. E. A. Stopford, Archdeacon of Meath. Friends please accept this intimation. Memorial service by the Very Rev. the Dean of Salisbury at St. Peter's, Vere-street, on Saturday, the 17th inst., at 10.30 A.M. No flowers, by request.

CARTER.—On April 12th, at St. John's Wood, Robert James Carter, M.D. Lond., aged 44 years.

MACKEITH.—On April 8th, at the home of her son, Alexander, Howard-road, Southampton, Margaret MacKeith, aged 76 years, wife of the late William MacKeith, L.R.C.P. Edin., of Hurst Green, Sussex.

TWYFORD.—On April 8th, at The Grange, Westbourne-road, Birkdale, of pneumonia, Edward Penrose Twyford, M.D., aged 78 years.

WEBB.—On April 8th, at Maida Vale, W., Frederick Ernest Webb, M.R.C.S., L.R.C.P., aged 77 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

UNQUALIFIED DENTISTRY.

AN action was concluded in the Pontypridd county court on March 21st before his honour Judge Bryn Roberts and a jury. The action was brought by a tramway conductor named O'Brien against an institution trading as the Hygienic Institute of Pontypridd and Glasgow. The plaintiff alleged that the defendant's local manager, who was not a qualified dentist, extracted 12 of his teeth (four of them being sound teeth) very unskilfully, that his gums were much torn, that four days after the extraction they were still bleeding, that they had to be stitched, and that his health was impaired. Medical evidence as to the stitching was given by one of the staff of the Cardiff Infirmary. His honour pointed out that the liability here did not depend upon whether the defendant's servant was or was not qualified. They had held themselves out as competent to do certain work, and if it were not done skilfully they would be liable for the consequences. The jury returned a verdict of £60 for the plaintiff. This case is one more example of the dangers attendant upon unqualified practice. It is undoubtedly true that the mere fact of being qualified does not exempt a man from the consequences of unskilful treatment. But the difference between a qualified and an unqualified man is great, for the qualified man has had a thorough training and the unqualified has not. But there is a certain class of person who thinks nothing of intrusting his body to any adventurer who by the aid of a glib tongue and ingeniously worded advertisements sets out that he can cure various ills, although the same person would never think of intrusting the care of his horse or the management of his affairs to anyone but a trained veterinary surgeon or a trained lawyer. Such a man has only himself to blame if, as in the present case, he comes to grief.

HYPNOTISM: A DISCREDITABLE CIRCULAR.

PROBABLY some of our readers have received a circular signed "F. J. B.," care of Pearson and Sons, Printers, 34, Mark-lane, London, E.C., the writer of which expresses his readiness to teach the practice of hypnotism to medical men who may be prepared to pay for it. Such a circular is before us, from which we learn that the proposed "instruction will be private and a hypnotic subject will be provided to practise upon. Every phase of hypnotism will be explained, and as far as possible demonstrated, *without reserve*." The anonymous would-be instructor supports his advertisement by recounting a few lightning cures wrought by his practice of hypnotic suggestion, and adds to them the following description of a feat which we can only call hypnotic doping. "The writer hypnotised a man entering for a boxing competition at 'Wonderland.' He had his nose broken, felt no pain, immediately attended the East London Hospital, where they expressed surprise that he should take it so coolly." "F. J. B." urges the utility of hypnotism as a therapeutic agent and after remarking that "the books on the subject are as numerous as they are useless," makes the absurd statement that medical men "know that with many of their patients their words can either kill or cure." Such a circular carries its own reprobation.

WORKHOUSE MEDICAL OFFICER AND POST-MORTEM FEE.

THE question of a medical officer of a workhouse not being allowed a fee for making a post-mortem examination on a workhouse inmate was raised by Mr. R. M. Going, medical officer at the East Preston (West Sussex) workhouse on April 7th. He applied for his fee, but the deputy coroner (Mr. A. W. Rawlinson) held that Mr. Going was not entitled, he being the workhouse medical officer. Mr. Going urged that the fee was allowed to other workhouse medical officers in the county, but the deputy coroner said the county auditor had disallowed such payments, and he (the deputy coroner) was advised that a workhouse doctor was not entitled to the usual post-mortem examination fee. The deputy coroner asked Mr. Going if he could give him any legal authority for the payment, whereupon Mr. Going said he would take steps to secure the necessary authority. There will, we fear, be some difficulty about this, but we have often felt that a medical man should be justly entitled to the usual fee for post-mortem examinations whether holding an official capacity or not.

LEPER ASYLUMS IN INDIA.

Sir J. Muir-Mackenzie, K.C.S.I., Member of Council of the Governor of Bombay, has recently opened a new leper asylum which has been erected by the Scottish United Free Church Mission, aided by a grant from the Government, at Khondia, Burkut, near Poona. Dr. J. Rutter Williamson, who presided on the occasion, said the conception of that new and large asylum originated with one of the secretaries of the Mission for Lepers in India and the East nearly six years ago. The society in question was founded in 1874 for the express purpose of caring for those afflicted and often repulsive members of society who in India and other Eastern countries were so numerous that they were often neglected and even starved. Since 1874 the work had steadily grown until now the society had leper asylums and homes for untainted children of lepers in no fewer than 76 places in India and the East, in every one of which there were European ladies and gentlemen giving their time and thought to the care and treatment of the sufferers. These asylums were scattered over the whole of India from Kashmir on the northernmost frontier to the very south of the peninsula, and also in Burma, Siam, Japan, China, Sumatra, Korea, and the Philippine Islands. This new asylum at Khondia had been built to accommodate 200 lepers—100 men and 100 women. The society had at present under its care, in its various institutions, 8206 lepers and 613 untainted children. Though those figures seemed large they bore a very small proportion to the total number of lepers in India, which was estimated at about 400,000. Sir J. Muir-Mackenzie, in the course of his address, observed that the necessity of establishing leper asylums had long been recognised by the Government, who had been prevented from doing more only by the want of funds. The Government were well aware of the danger to which the public were exposed by the unfettered wandering of lepers through the large centres of population. To some extent they were provided with an instrument for dealing with this danger in the Lepers Act, which enabled a magistrate in any area to which the Act had been applied to consign an indigent or begging leper to an asylum. The Act, however, had practically remained a dead letter, owing to the inadequate supply of asylums. This new building would help to remedy the evil so far as the district of Poona was concerned.

T. B.—We have no knowledge of the preparation, so we regret to be unable to help our correspondent.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

CHELSEA CLINICAL SOCIETY, Chelsea Dispensary, Manor-street, King's-road, S.W.

TUESDAY.—8.30 P.M., Dr. Dauber: Notes and Specimen of Case of Unusually Large Papillomatous Ovarian Cyst.—Dr. Blumfeld: The Nature of Sickness after Anæsthesia and the Best Means of Preventing or Treating it.

HARVEIAN SOCIETY OF LONDON, Paddington Infirmary, Harrow-road, W.

THURSDAY.—8.30 P.M., Clinical Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

FRIDAY.—5 P.M., Prof. Keith: On Specimens illustrating Malformations of the Face. (Museum Demonstration.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. G. Pernet: Clinique (Skin).
TUESDAY.—4 P.M., Dr. N. Pitt: Clinique (Medical).
WEDNESDAY.—4 P.M., Mr. J. Berry: Clinique (Surgical).
THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical).
FRIDAY.—4 P.M., Mr. G. French: Clinique (Ear, Nose, and Throat).

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.
TUESDAY.—5 P.M., Clinical Demonstration: Dr. J. Mackenzie.
WEDNESDAY.—3 P.M., Clinical Demonstration: Dr. F. Palmer.
THURSDAY.—3 P.M., Clinical Demonstration: Dr. T. D. Savill.
FRIDAY.—2 P.M., Clinical Demonstration: Dr. P. Stewart. 5.30 P.M., Clinical Demonstration: Dr. E. Macnamara.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3.45 P.M., Lecture:—Dr. J. Atkinson: Pharynx and Nasopharynx.
FRIDAY.—3.45 P.M., Lecture:—Dr. Abercrombie: Pharynx and Nasopharynx.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY.—3 P.M., Prof. F. W. Mott: The Brain in Relation to Right-Handedness and Speech.
FRIDAY.—9 P.M., Mr. A. Siemens: Tantalum and its Industrial Applications.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London, (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (21st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (22nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.)., Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (24th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospital operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 15th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 9	30·42	E.	...	102	70	41	52	64	Fine
,, 10	30·21	W.	...	93	62	41	50	54	Fine
,, 11	29·93	S.W.	...	110	71	41	52	59	Fine
,, 12	29·79	S.W.	...	99	63	41	49	52	Cloudy
,, 13	29·84	S.W.	0·03	77	56	41	49	51	Cloudy
,, 14	29·61	S.W.	0·10	102	60	51	51	53	Raining
,, 15	30·00	S.W.	0·01	104	62	43	45	48	Fine

During the week marked copies of the following newspapers have been received:—*Derbyshire Courier, Gloucestershire Echo, Yarmouth Independent, Scientific American, Yorkshire Post, Yeovil Gazette, Star, Durham Advertiser, Richmond Times Cardiff Daily Mail, Birmingham Mail, Notts Guardian, Bradford Observer, Morning Leader, Wimbledon Boro' News, Westminster Gazette, Manchester Evening News, &c.*

Communications, Letters, &c., have been received from—

A.—Dr. J. Stanley Avery, Kroonstad; American Proctologic Society, Philadelphia, Secretary of; Mr. J. Astier, Asnières; Ardath Tobacco Co., Lond.; Messrs. Allen and Hanburys, Lond.; Ashton-under-Lyne District Infirmary, Secretary of; Ashover Sanatorium, Chesterfield, Secretary of; Messrs. D. Appleton and Co., Lond.

B.—Messrs. Blond and Co., Paris; Messrs. Burroughs, Wellcome, and Co., Lond.; Dr. T. Bates, Worcester; Messrs. J. Beal and Son, Brighton; Mr. S. N. Bose, Calcutta; Mr. E. Blatchley, Lond.; Mr. R. R. Bakshi, Rajkote, India; Blackburn and East Lancashire Infirmary, Secretary of; Dr. R. Brown, Southampton; Mr. R. P. Bryan, Plymouth; Dr. A. G. Bisset, Rothes; Mr. R. W. Burkitt, Chandkhira; Dr. Carl H. Browning, Glasgow; Mr. W. A. Berridge, Redhill; Mr. J. A. Batchelor, Lond.; Miss Constance A. Barnicoat, Lond.; Mr. Alfred Butt, Lond.; Dr. W. T. Belfield, Chicago; Dr. Barnardo's Homes, Lond., Hon. Director of; Messrs. Blundell and Rigby, Lond.

C.—Mr. E. M. Corner, Lond.; Dr. T. D. Crothers, Hartford; Children's Fresh Air Mission, Lond., Secretary of; Cheltenham General Hospital, Secretary of; Messrs. J. and A. Churchill, Lond.; Messrs. J. A. Carveth and Co., Toronto; City of London Hospital for Diseases of the Chest; Dr. A. F. Cameron, Lond.; Chicago Society of Social Hygiene; Dr. F. G. Clemow, Constantinople; Mr. F. W. Clarke, Chorlton-cum-Hardy.

D.—Dr. W. G. Dickinson, Lond.; Messrs. Down Bros., Lond.; Dr. P. J. Daly, Cork; Mr. F. Diemer, Cairo; Mr. Loudon M. Douglas, Edinburgh.

E.—Evelina Hospital for Sick Children, Lond., Secretary of; East Dulwich Provident Dispensary; East Suffolk and Ipswich Hospital, Secretary of.

F.—Mr. N. Frossard, Yverdon; Funk and Wagnalls Co., Lond.; Formica; Messrs. Foster, Brown, and Co., Montreal.

G.—Mr. W. Grisewood, Liverpool; Mr. P. R. Griffiths, Cardiff; Dr. A. Giordano, Lercara; Messrs. Grimwade, Ridley and Co., Lond.; Guest Hospital, Dudley, Secretary of.

H.—Mr. C. C. Hinkley, Lancing; Dr. J. H. Holland, Washington, U.S.A.; The Harvey Society, New York, Secretary of; Messrs. Haasenstein and Vogler, Cologne; Mr. Randal Herley, Dewsbury; Dr. A. F. Hertz, Lond.; Hospital Saturday Fund, Lond.

I.—Messrs. Ingram and Royle, Lond.; Incorporated Institute of Hygiene, Lond., Secretary of.

J.—Miss M. W. James, Lond.; J. M.

K.—Messrs. Kutnow and Co., Lond.; Dr. W. F. Keating, Reading; Messrs. G. Kelly and Co., Lond.; Mr. L. S. Khrishnan, Anandasramam; Mr. Maurice F. Key, Lond.

L.—Mr. H. K. Lewis, Lond.; Messrs. E. and S. Livingstone, Edinburgh; Staff-Surgeon L. Lindop, R.N., Invergordon; Leeds General Infirmary, Manager of; Leeds Hospital for Women and Children, Secretary of; Mr. F. W. Lowndes, Liverpool; Messrs. Luzac and Co., Lond.; Miss Livermore, Meonstoke; Mr. C. L. Lakin, Lond.

M.—Mr. Anibal Mena, Brighton; Mr. W. H. Marsh, Aylesbury; Mr. J. Maberly, Woodstock; Professor Robert Muir, Glasgow; Maltine Manufacturing Co., Lond.; Dr. J. MacKeith, Lond.; Manchester Medical Agency, Secretary of; Mr. J. Murray, Lond.; Mr. A. Maloine, Paris; Messrs. McCaw, Stevenson, and Orr, Belfast; Dr. E. E. Maples, Ifon, West Africa; Messrs. May, Roberts, and Co., Lond.; Medical Graduates' College and Polyclinic, Lond., Sec. of; Messrs. F. Mundy, Gilbert, and Co., Birmingham; Macclesfield General Infirmary, Secretary of; Mr. W. Boxer Mayne, Swindon; M. D.

N.—Dr. Newman Neild, Bristol; Northumberland House, Lond.; Medical Superintendent of; North Staffordshire Infirmary, Stoke-on-Trent, Secretary of; Surgeon F. S. Nash, U.S.A. Navy, Philadelphia; Mr. J. C. Needes, Lond.; Mr. H. Needes, Lond.

O.—Messrs. Osborne-Peacock Co., Manchester.

P.—Dr. T. W. Parry, Lond.; Dr. M. H. Phillips, Sheffield; Messrs. Pratt and Co., Manchester; Messrs. Peacock and Hadley, Lond.

R.—Dr. A. Rose, New York; Dr. E. Rousseau, Lond.; Professor W. Ridgeway, Fen Ditton; Dr. A. E. Russell, Lond.; Mr. J. R. Riddell, Glasgow; Lieutenant-Colonel J. D. Reckitt, Wainfleet; Lieutenant-Colonel R. B. Roe, I.M.S., Nagpur, India; Dr. J. Robertson, Birmingham; Royal Albert Hospital, Devonport, Secretary of; Royal Sanitary Institute, Lond., Secretary of; Mr. Rushton, Walkden; Royal Albert Asylum, Lancaster, Secretary of; Mr. S. E. Roberts, Lond.

S.—Mr. C. Shelton-Lewis, Lond.; Dr. L. Smith, Lond.; S. L. S.; Seltzogene Patent Charges Co., St. Helen's; Spalding Printing and Publishing Co., Secretary of; Société de Médecine de Paris; Mr. F. A. Southam, Conway; Dr. S. H. Sharpe, Goring-on-Thames; Seamen's Hospital Society, Lond., Secretary of; Society for the Propagation of the Gospel in Foreign Parts, Lond., Secretary of; Dr. Robert Saundby, Birmingham; Messrs. W. H. Smith and Son, Lond.; Mr. H. B. Saxton, Nottingham; Star Engineering Co., Wolverhampton; Scholastic, Clerical, &c., Association, Lond.

T.—Mr. H. T. Tulloch, Lond.; Mr. A. R. Thompson, Lond.; Toronto Academy of Medicine, Librarian of; T. C. D.; Messrs. W. and F. Thorn, Lond.; Taunton and Somerset Hospital, Secretary of; Messrs. C. Tayler and Co., Lond.; Dr. G. O. Taylor, Norwich; Messrs. Thrupp and Maberly, Lond.

U.—Union Reklame, Lucerne; University of Aberdeen, Secretary of; Union, Ltd., Edinburgh.

V.—Victoria Wine Co., Lond.

W.—Dr. W. W. Webb, Exeter; Mr. John J. Waddelow, Whittlesea; Dr. E. Ward, Llanelly; Mr. W. McC. Wanklyn, Lond.; Messrs. Wright Layman, and Umney, Lond.; Dr. Arthur Whitfield, Lond.; Mr. W. Wachman, Lond.

Letters, each with enclosure, are also acknowledged from—

A.—Dr. Z. Abdalla, Assouan; A. F. M.; Army and Navy Male Nurses' Co-operation, Lond.; A. B. T.; Mr. A. W. Alger, Lond.; A. P. M.

B.—Mr. F. N. Brown, Frimley; Mr. D. W. Bishop, Zeerust; Benger's Food, Manchester, Secretary of; Birkenhead Union, Clerk to the; Beckett Hospital, Barnsley, Matron of; Mr. J. Bluett-Duncan, Lond.

C.—Dr. A. M. Collcutt, Brighton; Dr. T. H. Conarroe, Philadelphia; Dr. J. T. Callcott, Newcastle-upon-Tyne.

D.—Mr. T. Dixon, Lond.; D. F. S.; Messrs. W. Duff and Co., Lond.

E.—Eccles and Patricroft Hospital, Secretary of; Mr. W. Edmunds, Lond.

F.—Mr. F. T. Fagge, Lond.

G.—Dr. W. C. Gavin, Buckland Newton; G. V.; Messrs. Gaymer and Son, Attleborough; Messrs. G. Gillies and Co., Glasgow; Messrs. W. and A. Gilbey, Lond.; Dr. V. R. Gorakshakar, Hyderabad.

H.—Mr. C. H. Harding, Whittlesea; Dr. G. Home, New Plymouth; Haydock Lodge, Newton-le-Willows, Proprietor of; H. E. H.; Messrs. Hastings Bros., Lond.; H. E. M.; Mr. J. T. Hyatt, Shepton Mallet; Messrs. Harrods, Lond.; Messrs. S. Henderson and Sons, Edinburgh.

I.—Ingham Infirmary, South Shields, Secretary of.

J.—Mr. W. Johnson, Lond.; J. H.; J. M.; J. L. L.

K.—Messrs. B. Kühn and Co., Lond.; K. J.

L.—Major G. Lamb, I.M.S., Govan; Mr. T. Lansley, Lond.; L. S.; London Association of Nurses, Superintendent of.

M.—Mrs. McCarrison, Lisburn; Mr. R. Mosse, Berlin; Dr. M.; Dr. G. B. McKean, Ledbury; Dr. W. P. Moore, Preston; Manchester Guardians, Clerk to the; Messrs. Menzies and Co., Glasgow.

N.—Mr. W. S. Neave, Bournemouth; Dr. M. I. Nougues, Zaragoza, Spain.

O.—Mr. F. W. Ord, Castle Gresley; O. S.

P.—Mr. F. H. Preston, Lond.; Dr. H. Playfair, Lond.; Portsmouth Guardians, Clerk to the.

R.—Dr. J. Robertson, Portpatrick; Mr. H. P. Rees, Lond.; R. G. B.; Dr. J. Ramsay, Blackburn.

S.—Mr. G. C. Steinicke, Munich; Mr. E. M. Stockdale, Liverpool; *South Wales Argus*, Newport, Manager of; South Shields Corporation, Accountant to the; Mr. O. Sunderland, Bexley Heath; Mr. H. W. Scriven, Lond.

T.—Dr. M. H. Taylor, Johnstone; T. J. D.; Mr. J. Thin, Edinburgh; Mr. J. R. M. Thomson, Middle Brighton, Victoria; Tunbridge Wells General Hospital, Secretary of.

U.—University of Wales, Cardiff, Registrar of.

V.—Vancouver Medical Association, Secretary of.

W.—Dr. E. P. Wrinch, Boston; Mr. R. H. Wellington, Lond.; Mr. W. C. White, Banbury; Mr. R. S. Wright, Ashby-de-la-Zouch; Warrington Infirmary, Secretary of; Rev. A. W. Watson, Churt.

Y.—Dr. L. U. Young, Lond.

Z.—Messrs. C. Zimmermann and Co., Lond.

EVERY FRIDAY. **THE LANCET.** PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements and Situations Vacant	Ditto	0 4 6
	Every additional Line	0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

An original and novel feature of "THE LANCET General Advertiser," is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Advertisements (to insure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 35, Rue Franklin, Asnières, Paris.